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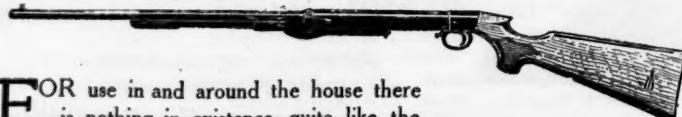
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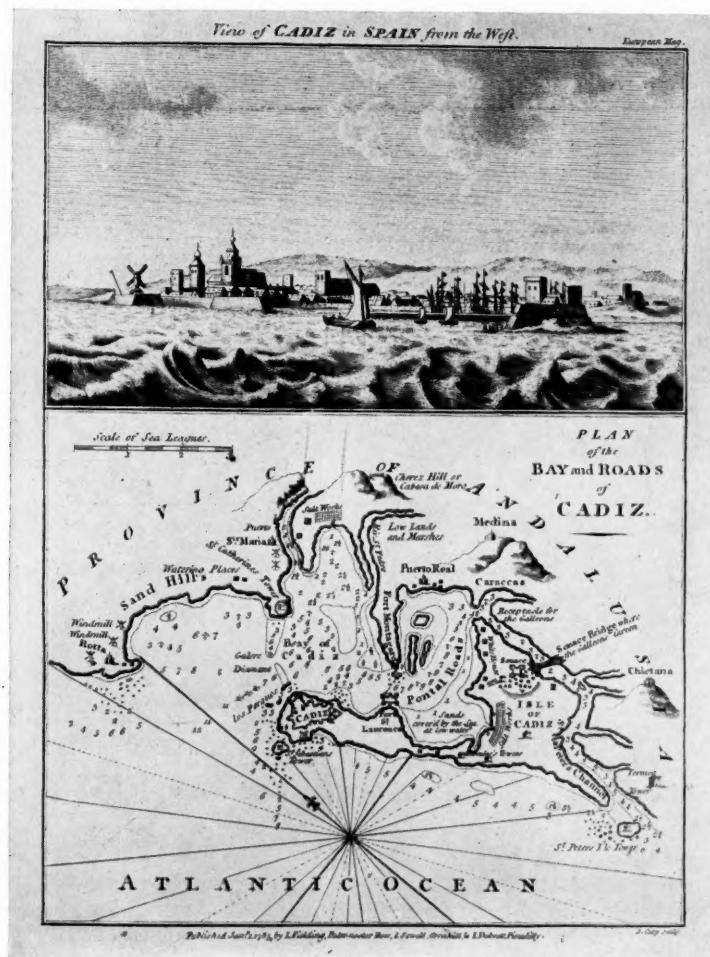


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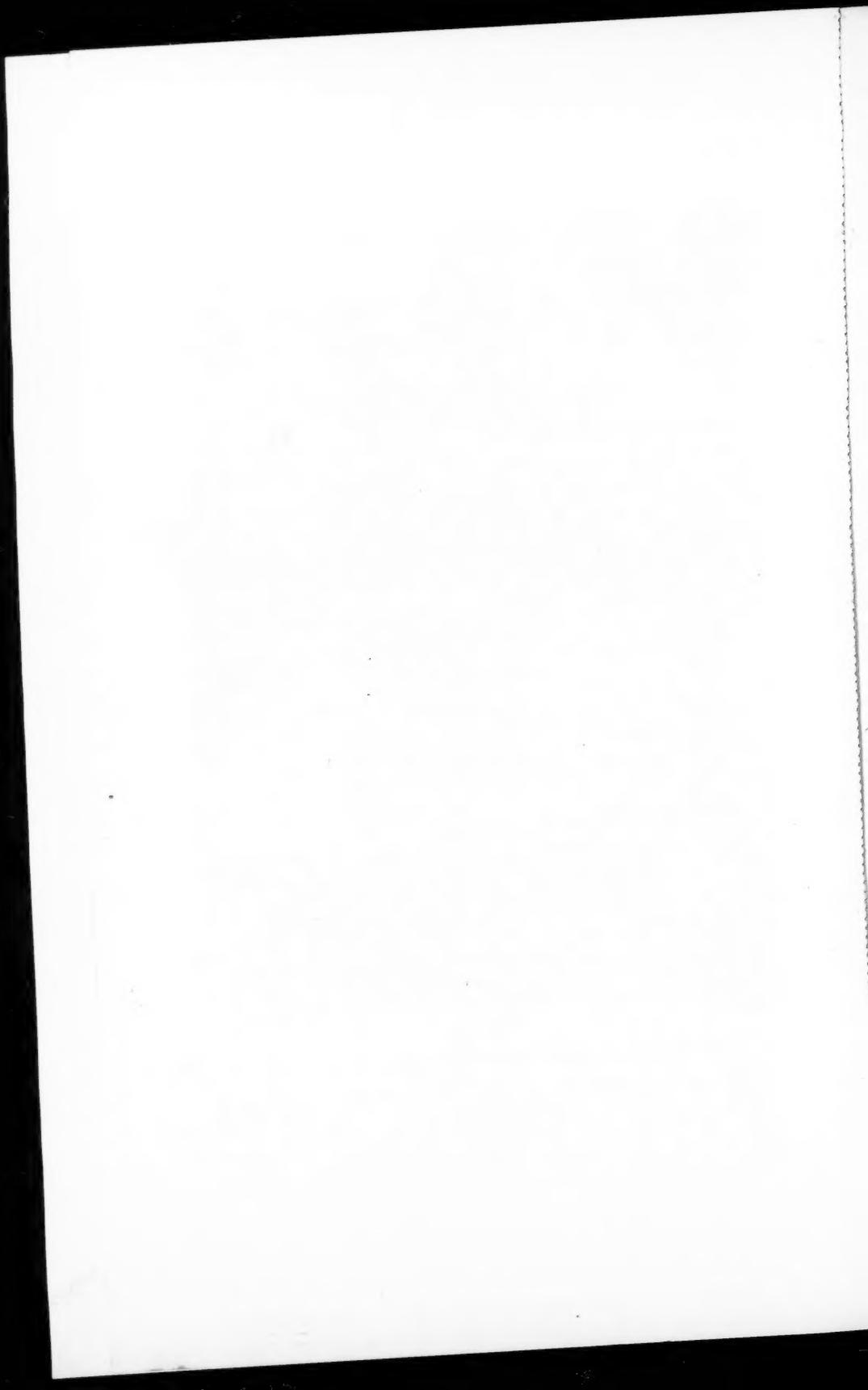
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VIEW OF CADIZ IN SPAIN FROM THE WEST.

SHOWING THE HARBOUR AS IT APPEARED SHORTLY BEFORE ITS BLOCKADE BY
THE BRITISH IN 1797-1798.

(From a print in the Museum of the R.U.S. Institution.)



ROYAL UNITED SERVICE INSTITUTION.

AUGUST, 1913.

SECRETARY'S NOTES.

I.—OFFICERS JOINED.

The following officers joined the Institution during the month of July :—

Lieutenant C. A. L. Brownlow, R.F.A.
Captain H. D. K. Macartney, Royal Australian F.A.
Lieutenant J. M. Mackenzie, Royal Scots.
Captain N. P. R. Preeston, R.F.A.
H. Pakenham-Mahon, late Captain, Scots Guards.
Lieutenant E. Bruce-Gardyne, R.N.
Major P. T. Westmorland, D.S.O., late Royal Warwickshire Regt.
Lieutenant G. B. Rowan-Hamilton, Black Watch.
Second-Lieutenant W. T. M. Bolitho, 19th Hussars.
Major H. St. L. Stucley, Grenadier Guards.
Major G. A. Egerton, 19th Hussars.
Captain H. E. Crocker, Essex Regiment.
Lieut.-Colonel J. W. Ormiston, R.G.A.
Captain W. D. S. Brownrigg, Sherwood Foresters.
Second-Lieutenant J. B. Morton, O.T.C.
Lieutenant H. W. Shove, R.N.

II.—THE EDITORSHIP.

The Council has appointed Colonel H. C. Wyly, C.B., late Sherwood Foresters, to be the Editor of the Institution JOURNAL, vice Major H. A. L. H. Wade, late R.A., who has resigned the appointment.

III.—LETTERS.

Members are reminded that the Council can accept no responsibility in the matter of letters and telegrams addressed to them at the Institution, there being no arrangements for the reception and forwarding of Members' letters, etc.

IV.—CLOSING OF THE INSTITUTION.

The Institution will be closed on Monday, August 11th, for the annual cleaning, and will reopen on Monday, August 25th. Owing to it having been found necessary to do a considerable amount of rewiring of the electric light in the building, it will necessitate the Library being closed for one month, *viz.*, from August 11th to September 8th. (Books, however, will be obtainable from the Lending Library on written application). The

Museum will remain open as usual during the summer months. The work of rewiring in the Banqueting Hall will be undertaken early in October, and it is hoped that it will not necessitate the Museum being closed for more than a week, but this date will be announced later.

V.—ADDITIONS TO THE MUSEUM.

- (6577). Surgeon's Blue Coatee.
- (6578). Uniform Waistcoat.
- (6579). Pair of White Stockinette Overalls.
- (6580). Blue Undress Forage Cap with Peak and Badge.
- (6587). Pair of Officer's Scarlet Dress Stockinette Pantaloons and Pair of Dress Hessian Boots.
- (6588). Pair of Officer's Scarlet Overalls.

All of this Uniform is that of the 8th Light Dragoons (Hussars). The lace and buttons are silver. Date about 1822.

They were formerly the property of Surgeon James Smet, who served with the 8th Hussars and Medical Staff from 1794 to 1824. This officer compiled a history of the 8th Hussars, which is to be found in the Library of the Institution.—Given by Miss J. G. Thorburn.

- (6581). Dress Coatee of an officer on the Medical Staff of about 1812.
- (6582). White Kerseymere Waistcoat.
- (6583). White Kerseymere Pantaloons.
- (6584). Black Cocked Hat with the Badge of the Medical Staff Corps.
- (6585). Black Silk Stock.
- (6586). Belt Buckle and Slides.

These Exhibits were the property of Surgeon James Smet, who served from 1794 to 1824.—Given by Miss J. G. Thorburn.

- (6589). An early type of a "Pepperbox" Six-Chamber Revolver, En's patent, 1845.—Given by Lieut.-Colonel W. H. M. Jackson, late 81st Foot.

- (6570). Six Lithographed Prints in Colour after G. H. Thomas, executed in 1861, viz. :—

1. Life Guards and Royal Horse Guards.
2. Dragoon Guards and Light Dragoons.
3. Royal Artillery.
4. Royal Engineers and Military Train.
5. The Guards.
6. Regiments of the Line.

Given by Captain P. W. Reynolds.

- (6591). Snuff-box made with a shell and silver lid bearing the following inscription:—"This shell was picked up on the Egyptian shore, by a sailor after the glorious victory of the Nile, gained by Lord Nelson over the French, 1st August, 1798."—Given by H. Meryon, Esq.

(6592). Photograph of the original despatch in six languages, dated 28th May, 1846, of Sir John Franklin, H.M.S. "Erebus," Lat. $70^{\circ} 5$ in. N. Long. $98^{\circ} 23$ in. W., to the Secretary of the Admiralty. The copy was formerly the property of Admiral Charlewood.—Given by E. P. Charlewood, Esq.

(6593). A Photograph of Captain Thomas Clark, of the Revenue Service, who was employed by Lord Nelson in carrying despatches, and of whom he said: "He was a sharp man, alive and seldom asleep, for though he had been on board his ship at all hours of the night he was always awake." He was born in 1773, and died at the age of 90.—Given by H. Meryon, Esq.

(6594). A piece of ribbon combining those of the Companion of the Bath and the Peninsula Grand Cross, for wearing on undress uniform. It formerly belonged to General William Cross, C.B.—Given by Lieut.-General J. H. Bor, C.B., C.M.G., Royal Marine Artillery.

(6595). Piece of the Atlantic Cable which was laid in September, 1866, it was given to Lieutenant B. Bax, R.N., who was serving on H.M.S. "Lily," which accompanied the cable ship.—Given by Mrs. B. Bax.

(6596). A fine specimen of an Indian Pipe of Peace with five branches, all of which are grown on one stem. It was presented to Lieut.-Commander B. Bax, R.N., of H.M.S. "Sharpshooter" by the Indians at Cameta, a village on the River Tocantins, a branch of the Amazon, Brazil, when employed in surveying that river.—Given by Mrs. B. Bax.

(3393). A Portrait of Lord Nelson in pastel.—Lent by General Sir A. G. Montgomery-Moore, K.C.B.

(3394). A Print in Colours "Lord Nelson explaining to the officers the plan of attack previous to the Battle of Trafalgar," published January, 1806. Below is a plan of the battle at its commencement, certified as to its correctness by the flag-officers of the "Euryalus" and Admiral Villeneuve.—Lent by General Sir A. G. Montgomery-Moore, K.C.B.

The attention of Members is drawn to the Museum Purchase Fund.

The amount received at the public entrance for the month of July was £47 4s. 3d.

VI.—ROYAL VISIT.

His Majesty the King of Spain, K.G., G.C.V.O., visited the Institution on Thursday, July 31st, and inspected the Museum.

PRINCIPAL ADDITIONS TO LIBRARY.

July, 1913.

Problems of Power—A Study of International Politics from Sadova to Kirk-Kilisse. By W. Morton Fullerton. 8vo. 7s. 6d. (Constable & Co., Ltd.). London, 1913.

George I. and the Northern War. By J. F. Chance. 8vo. 14s. (Smith, Elder & Co.). London, 1909.

The Gordon Highlanders—The History of their Origin, together with a Transcript of the First Official Muster. By John Malcolm Bulloch. 8vo. (Presented by the Author). (Banffshire Field Club). Banff, 1913.

Catechism on the Field Engineering Manual (Third Edit., 1911). By A. W. Sharpe. 8vo. 4s. (Forster, Groom & Co., Ltd.). 1911.

The North Sea Problem. By Perceval A. Hislam. Crown 8vo. (Presented by the Publishers) (Holden & Hardingham). London, 1913.

Les glorieuses Conquêtes de Louis le Grand—Recueil de Plans et Vues des Places assiégées, et de celles où se sont donnéés des batailles, avec des Discours. By Sébastien de Pontault, Sieur de Beaulieu. 3 vols. fol. £30. Paris, 1643—1692.

(The Sieur de Beaulieu was First Engineer and Maréchal des Camps et Armées du Roi to Louis XIV. of France, and may be regarded as the creator of military topography. He accompanied the Army, made on the ground the plan of the various battles and sieges, and enriched them with historical vignettes. The above was his most important work, and is known as the "Grand Beaulieu." It contains plans, etc., of all the operations of war from the Battle of Rocroi in 1643 to the Siege of Namur in 1692. Beaulieu himself died in 1674, and the work was completed at the expense of his niece, widow of the Sieur Des Roches).

The Annals of the King's Royal Rifle Corps—Vols. The Royal Americans, with Appendix. By Captain Lewis Butler. 8vo. 40s. Illustrated. 2 vols. (Smith, Elder & Co.). London, 1913.

Der junge Turke! Niederlage und die Möglichkeit ihre Wiedererhebung. By Field-Marshal Colmar von der Goltz. Crown 8vo. (Gebrüder Paetel). Berlin, 1913.

TRANSLATORS.

The following name should be added to the list of officers prepared to undertake translation work. (See page 444 of the April issue of the JOURNAL):—

CHARLES SIMON, Esq. (late 18th London Irish Rifles), "Gladwyn," Cromwell Avenue, Bromley, Kent: German, French and Spanish.

STUDY OF FOREIGN LANGUAGES.

The address of the following family abroad who receive officers desirous of studying the language, and have been recommended by officers who have stayed with them, should be added to those published in the May number of the JOURNAL:—

Germany.

FRAULEIN MORS, 2, Wall Strasse, Freiburg, Baden.

We are asked to notify the following alterations in the list published on page 572 of the May JOURNAL:—

HERR LEKTOR F. STOY, Villa Hansi, Eltville on Rhine, Germany.

FRAU GENERAL GISSOT, 55, Zasius Strasse, Freiburg, i/B. Germany.

THE JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

VOL. LVII.

AUGUST, 1913.

NO. 426.

[Authors alone are responsible for the contents of their respective Papers.]

CAVALRY ORGANIZATION AND TRAINING (HOME SERVICE).

By MAJOR C. L. GRAHAM, 4th (Queen's Own) Hussars.

On Wednesday, February 12th, 1913.

MAJOR-GENERAL E. G. ALLENBY, C.B., Inspector of Cavalry,
in the Chair.

NO one can observe the events happening in Europe to-day without being struck by the change that has taken place in the conditions of war during the last few years. In the old days we always took a considerable time, after the outbreak of a war, in getting our Army into form. Now we can no longer reckon on any such period of grace. In the present war the Bulgarians were ready beforehand. They did not allow the Turks time to organize and train their levies after the war began, but forced them to a decisive battle within a fortnight from the opening of hostilities.

In considering this subject I wish, first of all, to point out the faults I notice in our present training, and to suggest how improvements and alterations can be carried out. I then propose to set forth my ideal for cavalry training and the method of procedure which would ensure its being carried out to the best advantage so as to fit the regiment for active service, which is the ultimate object of all training.

I.—OBSTACLES TO TRAINING.

Under our present system we have paper organization and actual training, but the two are not carried out conjointly. *On paper* we have squadrons of a fixed number of men. *Actually* we have, in most cases, the numbers, but they are not trained. On mobilization the deficiency in the numbers of trained men is made up from reservists, the majority of whom would

have forgotten their training, perhaps would not be in a riding condition, and would not have that mutual knowledge of and reliance on each other which is so essential. Let me give you an illustration of the value of this mutual knowledge and the habit of co-operation. Take, for instance, the American Polo Team. That team made up their minds that they were going to win the international Polo Cup. They got their ponies; they got their men together; they played and practised together till they were absolutely perfect. They came over to England and met our teams—a great many of them as good or better players than the Americans—and supplied with as good ponies. But our teams had not the combination and the training of the Americans; they did not know each other's play, and therefore were defeated. Again, we have many men who are, on paper, trained soldiers, but, in fact, they are not trained for field work. Take, for instance, the case of the riding school; one rough-riding sergeant-major, two sergeants and two corporals are, as a rule, the allowance for this purpose, but when you have a great number of remounts and recruits, as many regiments have, it becomes impossible for a small staff like this to handle them. The result is that the riding school staff has to be augmented by as many as two extra sergeants and two extra corporals. As this riding school training goes on the whole year none of these men can be trained in field work; nevertheless, they appear on the squadron roll as trained men, and they would be taken for active service. On the other hand, if you were to stop all riding school for remount and recruits for some time, you would (under the present conditions) get such a block of remounts and recruits that the regiment would become congested with them, and you would be in a worse case than ever. Then again, in winter troop training, the troop is not complete, and is often made up of men who would not go on service in the capacity in which they are being trained. There is a waste of power in training unnecessary men, such as saddlers, shoeing-smiths, and saddle-tree makers. Then after troop training, N.C.O.'s and men are often transferred to another squadron, or leave on the expiration of their period of colour service, and go to the Army Reserve, thus failing to complete their training by not being present during squadron training. If you take any squadron roll and look over it you will find men under the following headings as employed:—

Garrison employ.	On command.
Regimental employ.	Absent without leave.
Squadron employ.	Absent with leave.
Servants.	Bands.
	Recruits.

Now count up the balance, and you will not have more than 35 per cent. of the nominal roll left. And when you come to squadron training—which I consider from every point

is the *important period of instruction* to complete the soldier's training—you will find that by taking officers' servants on alternate days and taking all the first-class recruits, your numbers, including all ranks except officers, will be somewhere between 65 and 90; and even of these many will not have done troop training, and are, therefore, not prepared for the more advanced instruction which they get in squadron training, while many of the section leaders will not have commanded their sections during troop training.

During squadron training the squadron leader is given a month to work all these men up to the standard which they would be required to attain on service. Now this period of one month is, I maintain, wholly inadequate. If all the sections had been through their troop training, each under its section leader, I would still consider the time inadequate; but when you take into consideration that many of the men are just out of riding school or off the square—some even dismissed for the purpose of attending squadron training—you will see how heart-breaking is the task set to the squadron leader. Any one of these young soldiers will display deplorable ignorance of his duties when questioned by a general, and the squadron leader, who has not had a fair chance of teaching his men, has to bear the responsibility.

After squadron training there follow regimental and brigade training; but the young soldier learns practically nothing from these, as they are intended rather for the training of the higher ranks. A soldier who has been thoroughly trained beforehand, is certainly able to derive a good deal of benefit from regimental training, but the young soldier, who has only just completed his squadron training, and who, very possibly, has not done any troop training at all, understands very little of what is going on at regimental training.

Now, to endeavour to improve this state of things I would suggest that we consider the subject from one point of view only, and that point of view should be: *The squadron trained for active service in the field.* For, once a squadron is trained properly and maintained in that condition, you will have your organization and, training for the squadron complete in one. If you have three service squadrons thoroughly trained, you will then have your regiment completely trained so far as the rank and file are concerned.

II.—ORGANIZATION.

I will now deal with the question of organization, and when I have that completed I will proceed to show how training and organization may become one, thus arriving at the desired result. I will begin with the lowest and work up, thus showing how the complete structure is built up brick by brick. It will, I am afraid, be necessary to discuss a number of small details, some of which will not appeal to those present very much unless

they are personally interested in cavalry work, but I do not see my way to avoid it.

THE SECTION.—Let us begin with the organization of the section. It should consist of a corporal (who should be a scout) and seven men (three of whom should be scouts, two despatch riders and two signallers).

It has been urged that as we now have a brigade signalling troop we do not require so many signallers with the squadron. My answer to that is that signalling is hard to learn, and can only be kept up by constant practice, and if one has not got enough signallers they cannot be rapidly improvised when a regiment has to go on active service. When a squadron is reconnoitring it is, in my opinion, the squadron officer's duty to send back any information which his squadron obtains to his commanding officer or brigadier by his own men, and not leave it to the brigadier to throw out his own signallers (who will probably be required for other purposes) to keep in touch with the squadron. It is, therefore, in my opinion, essential that each squadron should have a liberal allowance of signallers.

Of the seven men composing the section one should be the coverer to the corporal, in accordance with the principle, to which I attach the greatest importance, *that for every post, from the squadron leader downwards, there must be a man ready to act as a substitute*, and that this man must be constantly practised in performing the duties which he may be called on to undertake. For instance, there should be a private soldier in each section ready to take the place of the section leader; and a corporal in each troop ready to act as a substitute for the troop sergeant.

THE TROOP.—A troop would consist of three sections, organized as above, and of a fourth, or headquarters section. This headquarters section would be commanded by a corporal who would be a scout, signaller, or despatch rider, as the case might be; with him would be the senior corporal in the troop (as coverer to the troop sergeant), the troop officers' two servants, a cook with a led pack-horse, and a shoeing-smith; the remainder of this troop would be made up of reservists. It is, of course, obvious that the whole troop cannot be kept up to war strength at any time, but it would, in my opinion, be an admirable thing if two sections—I should like to say three—could be thoroughly trained and made up to war strength and maintained on that basis. The whole troop would then consist of four sections, making 32 men (or 34 with the troop sergeant and coverer). We should then have a total of about 144 for the full strength of the squadron.

THE SQUADRON.—A squadron would consist of four such troops, and a fifth, which would be the *headquarters troop*. The reason for suggesting the formation of this fifth or headquarters

troop, is that each troop could then be an independent unit, with its shoeing-smith and its cook and its pack-horse, and could be detached at any time without interfering with the organization of the squadron. This fifth squadron-headquarters troop, independent of the the rest of the squadron, is essential for a perfect organization. It should consist of :—

1 Squadron leader.	2 Trumpeters.
1 Second-in-command.	1 Squadron quartermaster-sergeant.
4 Servants.	1 Farrier-sergeant.
1 Signaller corporal or sergeant.	1 Saddler.
1 Signaller.	1 Cook with pack-horse.
1 Squadron sergeant-major.	

The last four of these would go with the baggage, as would also the four servants.

In this fifth or headquarters troop, I have suggested that there should be a signaller corporal or sergeant and one signaller as coverer. That is not allowed for in the present organization. Personally I have found it of great assistance on manœuvres to have a signaller corporal at the disposal of the squadron commander. I used to keep him with me when reconnoitring, and whenever my squadron dismounted he was placed on the look-out with field glasses for a flag or a helio or for anything that was moving; this arrangement leaves the squadron commander free to write messages or pay attention to other things. The squadron sergeant-major cannot be used for this purpose; he has other work to do; and therefore one wants a man on the look-out—a responsible man—who will be on the *qui vive* for signals and will also give warning of an attack.

On squadron parade the squadron sergeant-major and these two spare signallers would go in serrefile rank.

THE REGIMENT.—I will now discuss the regimental organization, as it is also affected. I think there should be a regimental headquarters troop consisting of :—

The commanding officer.	1 Signalling sergeant.
The second-in-command.	1 Signaller.
The adjutant.	2 Orderlies and 6 servants.
1 Regimental sergeant-major.	

All the regimental staff who go with the baggage when on service.

The machine-gun section complete.

My reason for suggesting having the machine-gun section with the regimental headquarters troop is that very often now it is attached to a squadron; it draws its forage and rations through that squadron, and for purposes of discipline it is under the squadron commander; in such a case it is more or less tied to that squadron, and if it is taken away there is often trouble about rations, discipline, and so on. I therefore propose that the machine-gun section should be placed directly under the commanding officer; the latter can simply hand it

over—when required to do so—to the commander of his brigade. It then becomes an easy matter to brigade all the machine-guns, and the brigade machine-gun officer can then take them over.

I think such an organization as I have suggested has many advantages, and I will now consider the question of training a regiment organized in this manner.

III.—TRAINING.

As already explained, the three squadrons would consist of four troops; each troop would have three sections, 24 men besides the two corporals and the troop sergeants. This would give a total—without cooks, shoeing-smith,¹ or officers' servants—of 108 N.C.O.'s and men per squadron, not including the headquarters troop.

If in the first year there were not enough men to make up this number, then I would deduct the seven (or less) men from one section; this will still leave 20 men per troop and 80 per squadron. If there were not sufficient men to make it possible to train three complete sections in each troop, then I would train two, and next year, if more men were available, I would continue with the third section. But what is essential in each case is to take the section leaders, train them, and then let them go and do the work in the field.

(a) Preparatory Period before Field Training.

To form a squadron on these lines we will take first the case of a squadron 80 strong; later on we will consider how it could be augmented in the following year.

As soon as the manoeuvres were over the squadron leader would commence to consider who were to be his:

- 20 Corporals or 16 section leaders.
- 4 Spare corporals.
- 24 Scouts.
- 16 Signallers.
- 16 Despatch riders.
- 4 Troop sergeants.
- Total 80, besides the squadron headquarters troop.

When he had selected these men he would make up his first two sections *complete* in each troop, and place the balance in the third section. The N.C.O.'s and men's names would appear in orders some time after manoeuvres, as follows:—

¹ I have left out the shoeing-smiths because I do not think it is necessary to teach a shoeing-smith scouting. All that is required of him is to accompany his troop and to do his shoeing, which is his proper work. The same thing applies to the cooks. These men could be reservists or young soldiers who need not necessarily have gone through the training in the field, but could be taught their work at other times and taken to the field when required.

"Signallers.—The following men to start a course of signalling under the regimental signalling officer; trained signallers to assist and practice from 2 to 4 p.m., 7 till 8.30 p.m."

In the morning those trained signallers would probably have to exercise their horses, or be in the stables. They could only do their signalling in the afternoons or evenings; or, if required, they might have to ride remounts in the morning and do signalling in the afternoon. Helio work could be done by strong electric light just to teach the working of the apparatus and the setting of the helio, which is the chief thing to learn. They could learn to use the lamp in a barrack room on wet nights, and the flag and semaphore in the afternoons.

Another order would read as follows:—

"The following men to start a course of scouting and despatch riding under the regimental scout officer, five days weekly. Trained scouts, and despatch riders, and men not having to undergo another year's training, to ride remounts."

When the scout officer is on leave, the scouts and despatch riders would learn pioneering work, using pioneer tools with the assistant scout officer, under the direction of an R.E. officer. When the signalling officer is on leave, the assistant signalling officer would have to train his men and to learn tapping telegraph wires, and such things, under an R.E. officer, besides continuing his signalling. I think that one subaltern officer should be trained yearly in signalling, one in machine-gun work, and one in scouting; these officers, when trained, would act as regimental assistant in each case for the next year, and in the following year they would take up the orderly duty of regimental scout officer or signalling officer or machine-gun officer as the case might be. There would thus always be two officers for each of these duties in a regiment, so that if one was away there would be a substitute to take his place.

One must not forget that through all this period, the regimental training, such as the training of the remounts and recruits, has to be continued. What we are considering just now is not the field training, but the preparatory training for field training. You are training your scouts under the scout officer, your despatch riders under the scout officer, your signallers under the signalling officer; and the reserve team of machine-gunners under the machine-gun officer would be undergoing training too. Recruits would ride trained horses.

In February of each year the list of N.C.O.'s and men for each squadron would be made up: in the first year to two sections *per* troop; in the second and subsequent years to three sections *per* troop, as before mentioned. All the names would appear in regimental orders by sections, troops and squadrons with the officers posted to each troop. All the section leaders as well as the troop leaders and the other different ratings for each section, would be detailed by name.

(b) Commencement of Field Training.

Training would commence on March 1st in each year, and during March the men would do individual work as in the present troop training, but the one great exception would be that the squadron leader and his second-in-command would be there to superintend this work.

I think it is a most necessary thing that a squadron leader should attend troop training and see that his troops are trained, and not leave it absolutely to a subaltern officer. It would be too much to expect a squadron leader to do all this throughout the winter; but if both the squadron leader and the second-in-command were with the squadron in March they could thoroughly superintend the training.

It is rather difficult to explain in the time at my disposal how all the small details would work out, so that there should be no hitch in the arrangements. It so often happens nowadays that men are taken away for a variety of small reasons which could not be foreseen. It is for this reason that I have endeavoured to show that it is possible for a squadron to be trained in troop training and squadron training and made thoroughly efficient without interfering with the regimental barrack training, the riding school or the recruits training.

During April, May and June the training of the three squadrons would continue and would include musketry, revolver practice, and all the work incidental to a squadron in the field. I would have the musketry training distributed over the three months.

The following table will give a rough idea of what a squadron has to do during these three months, in addition to its training in musketry :—

1. Revolver practice for those armed with the revolver, riding their own horses (they would continue till they can hit a target, life size, when riding at full gallop).
2. Squadron drill in various formations.
- 3a. Attack on guns. 3b. Reconnoitring squadrons.
4. Attack on Infantry.
5. Attack on a defended bridge.
6. Passage of a defile.
7. Advanced guard; flank guard; and rear guard.
8. Night march and attack at dawn.¹
9. Billeting and bivouacking.
10. Reconnoitring a village in enemy's country.
11. Destroying a railway line.
12. Defence of a bridge.
13. Outposts with pickets.
14. Outposts with Cossack posts.

Etc., etc.

¹ The introduction of the aeroplane makes No. 8 very necessary.

I will take two of these examples to illustrate what I have said as to the necessity of having well-trained intelligent men as troop leaders. First (No. 7), *Rearguards* : This, I consider, is the most difficult kind of work that a cavalry soldier has to do ; he is, most likely, called upon to do it in the evening, after a day's fighting, and he then has to take up his task afresh and use the whole of his energy and intelligence to prevent the enemy from cutting in on the rear of his main body, while at the same time he has to watch that he is not cut off himself. In cases of this sort, the problem of just when to move and where to go will very often be left to the brains of the troop leader. You may not have time to give him any orders or to tell him anything. He has to use his own intelligence, and it is only by practice in the field that you will get the N.C.O. to apprehend exactly what he ought to do and the right time to do it in such a case.

The second case I will take is that of No. 13, *Outposts* : Here, again, it is only by practising, in all kinds of circumstances, that a N.C.O. will gain the knowledge how to act in the new position, where to place the outposts, sentries, or Cossack posts. When insisting on the importance of constant practice we must remember that no soldier, and very few N.C.O.'s, or even officers, learn anything from written work ; they *must* have the practice in the field, they *must* see the thing done and have the reason for it explained to them. Even then they will not always understand it the first time, and the exercise has to be repeated again and again until finally they do understand. At stations abroad it is easier to give training of this kind, as the soldiers are older men and have less distraction than at home.

Paper schemes that are not worked out on the ground I consider useless, as they create false situations, and will never teach field soldiering.

(c) Miscellaneous Points in Connection with Training.

I think this will be the best place to touch on a number of miscellaneous points in connection with training.

MUSKETRY.—First, as regards the musketry course : I think the present course is good, but that it might with advantage be altered in one respect. I would suggest that once a man has fired all his preliminary rounds there ought to be no further signalling during his classification.

As a squadron leader, I would like to be certain that every soldier in the squadron thoroughly understood the sighting of his rifle when he comes back from doing the classification. Now, if a man shoots his classification without any signalling, you may be fairly certain that he has studied the sighting of his rifle ; whereas if he knows he will get the shots signalled he does not take the trouble to learn it. If he forgot it he would

risk losing his service pay. I put this suggestion to some of the staff at Hythe, and I gather that they thought it would be a good thing, though it might be rather hard on the man.

INSPECTION OF FORAGE.—I would recommend that during the four months' training, an officer from the Army Service Corps should be attached to the regiment, and should buy and inspect all forage and rations, so as to prevent officers being taken away from their work for this purpose. One Army Service Corps officer would be quite enough for this purpose for a regiment or even a brigade in one station.

COURTS-MARTIAL.—Then, again, with the same object in view, a colonel-on-the-staff or a standing court-martial could do all courts-martial; to take three officers away from field service to try a private soldier for desertion seems to me to be a waste of power.

PACKING TRANSPORT.—In squadron training the service transport ought to be available for some of the time to allow the squadron to get accustomed to packing and using it.

PIONEER WORK.—At least one section *per* troop ought to be instructed in pioneer work, using the tools provided for the squadron. I do not think we pay enough attention to that. The men do not understand the use of pioneer tools.

REVOLVER PRACTICE.—I think we do not do enough revolver practice. Every officer or soldier who is armed with a revolver ought to be so trained that he can make proper use of the weapon; that is, till he can hit a target (life size) when riding at full gallop. There is no difficulty about learning; it is simply a matter of practice.

REMOUNTS.—During the four months' period of squadron training, remounts could be led at exercise under the superintendence of the riding school staff. As soon as this four months' training was over, back would go the remount riders, and the old horses for recruits, as required, and the barrack training would begin again and continue right through till the end of February—unless the commanding officer or the brigadier required the service squadrons again for a day, or for a few days.

MACHINE-GUNS.—The machine-gun section could train at the same time and for the same period; and its young soldiers would be brought on in the same way in the winter, as it would require a second team *per* gun.

UMPIRES.—I do not think the taking away of officers from their squadrons, during field days, as umpires, would be so much felt if we were organized in the way I have suggested. But there is no reason why an officer should not wear the umpire's badge and command his squadron as well. I feel certain that he could give his decision just as correctly as if he were an independent umpire. The present system of taking

an officer away from the squadron to do umpire work is not altogether fair on the squadron leader.

ACCOUNTANCY.—During the winter months sergeants likely to be promoted S.Q.M.S. could be taught squadron account keeping in the local pay office (though this teaching ought not to be given during stable hours). We have all of us known cases of sergeants getting into trouble through their accounts, and my experience has been that their failure is often due to the fact that they do not really understand their accounts. If men could go for instruction to the local pay office they would get a chance of learning how to keep the accounts, and that would, I think, obviate a great deal of trouble.

STABLES.—But every available soldier should attend stables from 11 to 1. The present system allows many men, who ought to be present, to get off stables on some pretext or other, with the result that the squadron leader is left without enough men to groom the horses. The efficiency of the squadron naturally suffers. It is very difficult for a squadron leader to keep his horses thoroughly fit unless he is able to insist that every man shall attend stables.

TRAINING WITH HORSE ARTILLERY.—Finally, there is a little matter in brigade training. I think we, in the cavalry, do not sufficiently recognize the immense increase of power of modern artillery; that we do not make enough use of artillery, and manoeuvre with the batteries for a pivot; I think our endeavour ought to be to draw the enemy's brigade under the fire of our concealed guns before we bring off our own cavalry attack. I think sometimes we are inclined to forget what very fine artillery we have got, and to plan the cavalry attack without taking the artillery into sufficient consideration. I know I am advocating conditions which many would not agree with, but at the same time I feel that I am right. I would suggest that we should have two batteries of horse artillery with the cavalry brigade, but they should be only four-gun batteries. This arrangement would fit in with the peace organization, as at present a horse artillery brigade consists of two batteries under a lieut.-colonel. My reason in advocating this is that two four-gun batteries are more mobile than one six-gun battery, and you would have the horse artillery brigade commander to assist the brigadier of the cavalry brigade. Personally, I would like to see the horse artillery brigade commander very often put in charge of the cavalry brigade, and the cavalry brigadier take the command of the horse artillery brigade, as success will only be gained by the entire combination of these two arms in the actual fight.

(d) **The Value of Four Months' Continuous Training.**

If the methods which I have outlined were adopted we should feel that we had always ready a regiment of three

thoroughly-trained squadrons with its machine-gun section; a regiment in which each man would know his place in his section and his troop. It needs no imagination to see how men trained in this way would work together, how much better the scouting and all other work would be done. Indeed, when one considers the nature of the various duties that a trained cavalry soldier should be able to perform, and that of the 55 to 80 *per cent.* of the men who have to be trained, each one is required to be a machine-gunner, scout, signaller or a despatch rider, I do not think I am overstating the case when I say that it would take at least four months to make the men so trained reliable, and to get the whole squadron to work with a swing. Or, again, consider how four months' field training would improve the men's riding; because they would be at it day after day, and—being more or less "on their own"—they would improve in a way which they could never do in a riding school. Why is it that a young officer improves so much more in his riding than the young soldier? The answer is because he rides so much "on his own" without being drilled all the time. Practice makes perfect, and practice in the field will make men perfect in the field, which is what we want; whereas practice in the school will make men perfect in the school, which we do not want.

We are at the heart of the Empire and liable at any moment to be attacked; we have too many young soldiers and depend too much on them and on reservists. As a cavalry officer I feel that we want our branch thoroughly trained and kept standing and ready for instant action, and after much consideration I feel that the most advantageous way to carry out this training would be to give the squadron leader more or less a free hand: to send him away from barracks, and let him live in the country and do all the training in a genuine manner.

(e) Conditions Indispensable to Ensure Continuous Training.

But there is one indispensable condition for the working of the system and that is that nothing must be allowed to take these men out of their section, troop or squadron, except the doctor's certificate, or desertion.

What I mean is that these men, once their names have been detailed in orders, cannot be allowed to leave under any pretext. It must not be possible for a man to go to the reserve or to the military police or anywhere else until 14 months are over, or at any rate until another man has been trained to take his place, so that the three squadrons shall always be ready at any moment to take the field, trained as well as it is in our power to train them.

This question is of the utmost importance. My suggestion is that no man should be put through the four months' squadron training if he is due to leave before April 30th of the following

year, unless he is required to make up the necessary strength, in which case he ought to be compulsorily kept on till April 30 of the year following. That is to say a man who was trained in March, April, May and June, 1913, should not be allowed to leave the Regiment till April 30th, 1914.

This retention of the trained soldier for two months after the squadron has commenced the four months' training of the next year is necessary to prevent a gap, and to allow of the new squadron having made a good beginning with its training before the men of the previous year are allowed to go. For the first few years these retained men would require a bounty as a condition of their being kept on, but the conditions of enlistment could be altered so as to make every man who joined undertake to remain on for so many extra months in order to complete his service up to April 30th following his completion of seven years' service.

It may be said that such conditions would be too hard on the soldier, but we must remember that, although the soldier joins for his own good, once he has joined we must consult the country's good and not his. It is essential that the fighting squadron should be left intact for the *fourteen* months on paper, although a new fighting squadron has been commenced at the end of the *twelve* months.

I think care should be taken to arrange that all the men going to the reserve in the following year are not put into the same section, but that each section should have some of last year's trained men. After the training there would be no objection to these trained men being employed on any *temporary* brigade or regimental duty. What I mean by *temporary* is: "any duty at which they would not be expected to continue in case of the regiment going on active service."

DRAFTS.—I have not overlooked the matter of the drafts for abroad. If these drafts were stopped, or nearly so—simply filling up the death vacancies and vacancies of 21-year men—for two years, it would give the home regiments a chance of getting well on their feet and getting sufficient men to fill their service squadrons. What we suffer from now is the constant drafts that have to be prepared for abroad. We should have to keep the men in India, and they would have to receive a bounty for it. (They were kept on during the South African War for another two years). In the meantime, we could enlist a sufficient number of men to make up the numbers required, and at the end of two years I think it would give the home regiments a very good chance of having their service squadrons well up to their numbers.

It is possible that some people may regard this four months' training as a hardship. Well, even if it were, I would still advocate it; but, as a squadron leader, with many years' experience, I feel certain that the whole scheme would be a relief

and a godsend to all. What wears people out is the constant changing, and under this régime there would be no changing for 12 months; no promotions, no going on reserve, and no disturbing transfers of officers, N.C.O.'s and men from one squadron to another.

Every troop officer, troop sergeant, or corporal would take a greater interest in his troop or section if he felt it was his, any how, for a fixed period of one year, and there would always be the desire to have the best troop or section. How often has one not seen this keenness nipped in the bud by the transfer of the individual to another squadron; how often, as a squadron leader, has not one seen one's best N.C.O.'s taken away for some staff duty?

The great object in the regiment ought to be to get the best men of all ranks in the service squadrons, so that the fighting unit should be the best available. But at present every man tries to get away from squadron work, and the best of N.C.O.'s try for "staff jobs," and it is the men who are no use who are sent back to squadron duty.

I would suggest that a payment of 2d. a day extra to troop sergeants and a penny a day extra to section leaders should be granted, and also that only those men who go through this four months' training should get first-class service pay. I would do that in order to let the men see that it is recognized that they have been selected for the post because they are considered the best men.

BAND.—I have not yet mentioned the band, and I feel that a band, and a good band, is very necessary, but that three trained squadrons are more so; however, with care and organization I do not see why we should not have both. I quite appreciate the fact that there are difficulties, but I always hold that difficulties are only things to be overcome. A cavalry band to be of any use ought, in my opinion, to have about 40 men and five to ten boys. Out of these 40 only 20 men ought to be trained bandsmen. What I mean is that they would not under any consideration be in the service squadron; they could be used for stretcher bearers, as they are supposed to be at present. The remainder of the men—20 in all—should do their squadron training, not three days a week, but every day. If you are learning the alphabet it is not much use learning every other letter. I do not think it is much use training a man every other day or every third day to do his squadron training. He has to be there the whole time.

TRAINING OF OFFICERS.—It may happen that an officer will be absent from his troop for this four months' training, in which case I would recommend the following plan:—Let each regiment of cavalry have one regiment of yeomanry affiliated to it; then, if any regular officer were absent from his squadron for the four months' training, the commanding officer could apply

to the Special Reserve, and then to the Yeomanry, for an officer to fill his place, with the understanding that, in the event of the squadron going on service before it has completed another training, that officer would go with that squadron. I think it is most necessary that the officer who is trained with the squadron, and the men who are trained in it, should go on service together. If you had a subaltern going to the Cavalry School you would get somebody for the service squadron in his place, a Special Reserve officer or a Yeomanry officer. A Yeomanry officer should, I think, after four months' training, be a first-class soldier. There are many Yeomanry officers in England who would not do peace soldiering with a regular regiment under present conditions, but who would be willing to do four months' training with the proviso that they should have a chance, within 12 months, of going on service. Personally, in my squadron I would only be too pleased to take an officer who could ride, but otherwise knew nothing of soldiering; after having him in the field daily for four months he should be well able to lead his troop, provided he had a head on his shoulders.

In addition to linking the home cavalry regiments with the Yeomanry I think it would be advantageous to link every home regiment with a Dominion regiment, and to have an interchange of officers for periods of a year; this plan would help to link the Empire together, and we would learn many a useful idea from the Dominion regiments; and it would make a bond of union between us and them which nothing could break. Besides, it would gradually help to make the system of training universal. An officer sent to Australia or Canada for a year would come back with ideas that would be very useful to us, and *vice versa*. It would create good fellowship to have one regiment linked with another, and in case of active service you could always rely on some of those officers turning up. If you were short of an officer for your service squadron you might get a Dominion officer who had come over for the four months' training to remain in England for the rest of the time. I think altogether the system would be most advantageous. We learned a great deal in the South African War, and I think we shall learn a great deal more in the future, from mixing with the officers of the various colonial regiments.

IV. HIGHER ORGANIZATION.

I understand we are to have three cavalry brigades in a division, thus allowing us to form a second division by using the two regiments of Irish Horse. And as an ex-adjutant of Yeomanry I do not see why three Yeomanry brigades could not be armed with sword or lance and so form a third cavalry division. I feel confident that, with care, this plan would work, and that the loyal assistance given by all ranks of the Yeomanry would bring these three brigades to a high state of efficiency and

render them well able to cope with European troops, thus giving us, in all, three cavalry divisions. I believe you could form a brigade or even a division of Yeomanry armed with the sword or lance, which would prove its value on service, even against the best Continental troops. The difficulty would be that they would have to do a little longer training. I would not train them for scouting purposes, but I would train them more or less for mounted infantry work and for shock tactics. I think in this way you would get a very useful 3rd Cavalry Division.

There are several lines we might work on, but I feel, after studying the home service cavalry training as one sees it daily, with all its hitches and interferences, that the lines I have mentioned are the right lines to produce the best results, and to give us the training our men and horses require. Many men ask how we are going to avoid this and that difficulty, but I have looked at it from every conceivable point of view, and I see no other course left to us to bring about the desired result so satisfactorily. I do not think there would be many time-expired men kept on after the first year or two, as things would settle themselves. Training is altered so often nowadays that reservists called up would be out of date, and there would be no time to teach them. Signallers soon forget their work, and the system changes from year to year. The plan I advocate would ensure that every regiment is ready within a few hours to march off, while the confidence that the men would have in each other would work wonders against the enemy.

DISCUSSION.

Dr. T. Miller Maguire, M.A., LL.D.: I was reading the great authority Bernhardi once again a few days ago, and he says that musketry as well as horsemanship has become an essential part of the training of cavalry. So it is with pistols and revolvers; even in old days pistol shooting—some excellent illustrations of which we have in this Institution—was a very valuable art. Some of Marlborough's men charged up to the enemy and shot into their faces. So in the American Civil War pistol tactics were of great importance, and certainly the Lecturer is right on that point. In the American Civil War there was an enormous amount of cavalry work done principally by mounted infantry, and much good resulted from it to all the Federal Army, while Confederate leaders like Stuart and Astley have almost rivalled Murat's men.

With regard to the question of training, take horsemanship:—I was in charge of 1,600 of those improvised Jehus who were sent to Africa from our riding schools, and I know that we sent to Africa men who were passed because they went three times round the riding school, although they were thrown off twice. They were allowed, because of their gallantry, to mount for the third time and go round again in spite of the antics of their horses and their marvellous style of carrying a carbine. Do you call that training for war? Will it be of any use in a European war?

If we are involved in a European war I believe I am right in saying that the cavalry will be of more importance than any other arm for strategical as well as tactical purposes, and they are at least as important as any other arm for reconnoitring purposes and surprise. There is scarcely any direction in which they are not useful, whether for sending information or for anything else before, during or after a battle. I do not believe that even aeroplanes will be anything like as good or reliable for sending information as the cavalry. Then with regard to the necessity of training, I should like to ask the gallant Lecturer whether he does not think the horses will be required to be trained as well? Is training in a hurry, training in a rush, and forced training much use? I would like the horses to be well trained as well as the men before they go into action. The only panic that I can remember in the war between Germany and France occurred at the battle of Gravelotte. In one of the Hussar regiments there were a few fresh untrained horses which came from the reserve near St. Huberts. These heard the noise of musketry and cannon. They bolted through other cavalry who were also upset; they then bolted through the infantry and upset them, and the whole of the infantry and cavalry eventually were in a state of abject confusion, and the King and Staff were involved in the rout; and if Bazaine had broken out on the left flank the disaster might have been terrible. That is an example of the folly of people in this country, who get up, as they did only this week, and pretend that improvised cavalry will be of much use.

Colonel Sir L. Rolleston, K.C.B.: I came here to-day only to listen, because I noticed that the paper was on cavalry organization and training, and my experience has been entirely in another direction—the training of irregulars. I therefore did not propose to say anything at all, but as I am called upon by the Chairman, and as the question of the combination of the Yeomanry with the cavalry has been referred to, I should like to say that that suggestion would, in my opinion, be a very valuable one if it were carried out.

With regard to Yeomanry officers being attached to a cavalry regiment and sticking to it if it goes on service, that, I think, would be a most excellent thing and would be very much appreciated by the officers of the Yeomanry. But I am not sure that as regards the good of the service it would lead to very much, for the simple reason that it is not as if we had a large reserve of Yeomanry officers; we are quite as short in the Yeomanry, if not shorter, than they are in the Regular service. So that, although it would be an excellent thing where it did occur, it would not amount to very much. Another point to be remembered is that many of the best officers in this service are men who are making their own living by professional work, and it is only a very limited number of them who could afford to do anything of the kind. Therefore, although it is a most valuable idea I am afraid it would not come to much for those reasons.

A YEOMANRY BRIGADE.

With regard to what Major Graham said about forming a Yeomanry brigade of men who are qualified to act as cavalry, as General Allenby knows, it has been my idea for a long time that this should be done. I am quite sure it could be done, and that it would prove to be an excellent thing. The men who join the Yeomanry join because they have cavalry instincts, and have sympathy with horses. They are horsemen, and are quite capable with a little more training than they have now—especially

if that training is sensibly apportioned and they are taught reconnoitring at the time of year suitable for reconnoitring and drill at the time of year suitable for drill—of being formed into a very useful cavalry brigade indeed, and being properly armed like the rest of the cavalry. As the Chairman knows, I was very much disappointed that, when I was with my brigade on Salisbury Plain, he was not able to come and see it at drill. We had the brigade out, and for experimental purposes drilled it entirely as a cavalry brigade for one or two days; it proved most handy, and I am certain, with a little increase in the training, that proposition could be carried into excellent effect. I hope it will be tried.

With regard to what has been said about horsemanship, I think that applies generally to the irregulars as well as to the regulars. A man has to be a horseman first even before he is a soldier. I am of opinion that much too little importance is attached to horsemanship. An instance of this is the system that we have now for mounted infantry, which proceeds upon the idea that by giving a man a short course of horsemanship you can qualify him for mounted service in the field. But nothing is more uneconomical than the indifferent horseman. I consider there are two classes of people who must be specialists: one is the horseman and the other is the sailor. You can no more make a man a horseman by giving him a course in horsemanship, than you can make him a sailor by giving him a short course of instruction in how to navigate a battleship.

Keeping entirely to the question of the training of irregulars, I think the custom of imagining that because people are amateurs they cannot be made into cavalry proceeds from our forgetting that one great secret of successful training, especially training that is limited in time, is to remember that training should always be the complement of natural qualities. Therefore if you have a horseman who is naturally qualified, who is able to ride across country, and can by himself perhaps stalk game and do things of that description, instead of abandoning all hope of making a soldier of him and wasting time by teaching him what he knows already, the sensible thing is to drill and discipline him and so make a soldier of him, and then you have the complete man. That, I think, is a thing which has been too much neglected in the training of our irregulars, and our practice in this respect might well be altered. I have nothing further to add, because I wish to confine myself entirely to things with which I am acquainted.

Brig.-General H. S. Horne: I was glad to hear the Lecturer refer to the co-operation of cavalry and guns. There is no doubt in my mind that cavalry and artillery officers do not devote sufficient attention to that particular question. What we ought to do now is to work up the idea that the cavalry and the guns are part and parcel of the same organization. This must be kept in view throughout our training. Guns should be included in all schemes, regimental exercises, etc. Officers of horse artillery should join cavalry regimental exercises and *vice versa*. A section of guns can frequently accompany a squadron or regiment at squadron or regimental training to the mutual advantage of both arms. I am under the impression that co-operation with the artillery is now receiving much more attention in the infantry than in the cavalry. The regulations impress upon infantry commanders that he who undertakes his attack without artillery support is unlikely to attain his object; and I think the cavalry must study the application of the same principle. If by temporary attachment more thorough interchange of officers could be arranged so that

the cavalry man might acquire some acquaintance with the guns and the artillery man might secure a more intimate knowledge of the tactics of the squadron, many little difficulties which now exist would disappear and excellent results would soon be apparent.

Major D. J. E. Beale-Browne, 9th (Queen's Royal) Lancers: Speaking as a cavalry soldier it seems to me that the crux of the whole difficulty as regards the training of the men is the employed men. If it were realized that employed men are necessary and that they should therefore be supernumerary to the fighting strength, I think it would simplify the matter very much from the squadron leader's point of view. After all, cooks are necessary in war just as much as they are in peace; and to be a good cook a man must have training in his particular art. Therefore I do not see the necessity of training men in peace for jobs that they will not perform during war. A man who is cook during peace will be cook during war. Servants will be required during war, and clerks will be required during war, and if a system were adopted whereby men holding these necessary "staff jobs" were regarded as supernumerary to the fighting strength, the fighting strength would be left intact to learn their own job, and fighting men would not be taken away to replace these "staff jobs." I think, speaking as a squadron leader, that is the difficulty one experiences in the training of one's squadron.

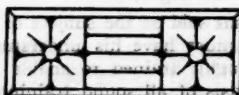
The Chairman (Major-General E. H. Allenby): I think no controversial matter has been raised in any of the speeches that have been made; all the officers who have taken part in the discussion are practically in accord with the Lecturer in his views. Major Graham's views are somewhat radical, and would necessitate changes in our present organization which I do not suppose we are ever likely to see. But to my mind there is a very strong current of sound common sense underlying all the suggestions that the Lecturer has brought forward, even though they cannot all be adopted.

As Major Beale-Browne has said, the evil of employed men must exist, but I think, perhaps, it is not quite as bad as the Lecturer suggested. A great deal of the evil of employed men can be obviated by careful regimental and squadron arrangements.

What the Lecturer has said on the subject of understudies is extremely sound—that every man must have his understudy, and that the section leaders should be thoroughly trained to enable them to train their own sections. That is the basis of all sound training.

With regard to the suggested co-operation of the Yeomanry with the cavalry, I fancy that schemes with that object in view have been considered from time to time. I have very little doubt that if we were carrying out a successful campaign, we should be very largely indebted to the Yeomanry officers to fill up the gaps in the ranks of the cavalry. The cavalry must always be short of officers. The very nature of their duties and of their life in endeavouring to keep themselves fit leads to accidents. For instance, the bulk of our cavalry officers hunt throughout the winter, and that results in some being laid up in the spring. Hunting, point-to-point races and polo are responsible for a good many accidents. In the course of the year you will find a large number laid up through unavoidable accidents in that way—accidents which occur in keeping themselves fit.

The class of officers we have is magnificent. I think it will not be amiss to call your attention to the case of young Captain Oates, of the Inniskilling Dragoons, who has just met his death in the Antarctic. He was a brother officer of mine, although I never met him, because he joined the Inniskillings just as I left the regiment. During the Boer War, Captain Oates went out to South Africa with a draft. Immediately on his arrival he was sent up on the line of communications, and his draft was sent off to engage in some minor operations, as they were considered, against a Boer Commando. He was surrounded by a very much superior force and badly wounded, and many of his men were shot down. The Boers suggested that he should surrender. He said: "No, I am out here to fight, not to surrender," and the fight was continued. Captain Oates, although he was very severely wounded, cleverly managed to get the whole of his unwounded men away, and when the Boers eventually took the position they only found Oates and a dozen or so wounded men. The whole of his unwounded men he had slipped away one by one, and in that way he saved practically the whole of his unwounded detachment. He was a man full of resource and high courage. His death will, I suppose, go down to history as one of the most heroic deeds ever known. Realizing that he was a burden on his companions and that if they stayed to help him they must die, he walked out of the tent into the blizzard and deliberately sought death to save his companions. That is the type of officer we get in the cavalry, and I think as long as we get that type we shall do well.



THE TECHNICAL AUXILIARIES OF NAVAL STRATEGY.

[Translated from *Nauticus*, 1912, and published by permission.]

NAVAL STRATEGY AS THE ART OF THE DISTRIBUTION AND DIRECTION OF NAVAL FORCES.

THE definition of naval strategy given by a French writer, is that it is the art of distributing and directing naval forces.¹ Difficult as it is to find a clear, short and, at the same time, comprehensive interpretation of this term, it will be generally agreed that the distribution and direction of naval forces are an essential function of naval strategy. The technical means by which naval forces are directed, distributed, and supplied are therefore to be regarded as the technical auxiliaries of naval strategy. The directing of naval forces is carried out with the aid of the Intelligence and Order-transmitting Service. The central authority acts on special information collected by this service, and sends through it to the leaders of the naval forces the important information and orders which they require. We will not here speak of the importance and the organization of the Intelligence and Order-transmitting Service and its influence on the success of naval operations.

It is not intended to deal with strategy in general, but only with certain of its instruments. It is, therefore, only necessary to show that efficiency does not depend on the organization alone, but also on the technical means employed. This will be discussed in the first section : "The Technical means of the Intelligence and Order-transmitting Service." Naval forces are, at the present day, less able than in the past to remain self-dependent. The central authority which arranges their distribution must therefore look after their maintenance. The problem of maintaining the naval forces is so comprehensive, that the method of solving it must necessarily affect the distribution.

In the second section the technical means for the maintenance of the naval forces—in other words, the Supply and Repair Service—will be considered. It is obvious that within the limits of this article it is impossible to deal exhaustively

¹ "La Stratégie Navale" in the *Revue des deux Mondes*, 1889.

with the various means, as, for example, cables, wireless telegraphy, docks, workshops, etc. It is only practicable to show their important relation to, and their influence on, naval strategy. It will be seen, however, even with the most superficial consideration, that the ground to be covered is still very extensive, and tends to become more so. Technical science does not favour all navies equally, as its development varies very considerably in different countries. The Navy of that country in which the position of technical science is very high naturally has an advantage, assuming, of course, that the country knows how to make use of it. Only certain of the relationships between technical science and naval warfare will be considered here; the most important, that of the weapons themselves, we are not much concerned with here, and have nothing at all to do with their production. It will be generally recognized how important it is that the Navy should remain constantly in the closest touch with all branches of technical science and should know how to utilize every new development. The significance of technics is the main point which distinguishes the present time from the sailing-ship period. The principal features of modern warfare can also be traced in past wars. As, however, the technical auxiliaries have become numerous and more reliable, so also has their importance increased, and it may be expected that in the future the relationship between these auxiliaries and the main factors of naval warfare will develop in a way quite different from hitherto.

A. THE TECHNICAL MEANS OF THE INTELLIGENCE AND ORDER-TRANSMITTING SERVICE.

(The Directing of Naval Forces).

I. THE SAILING SHIP PERIOD, ITS REQUIREMENTS AND THE MEANS AVAILABLE.

A hundred years ago naval strategy, as regards the Intelligence and Order-transmitting Service, could only work at very great distances by despatching such concrete things as persons or letters. Telegraphic messages could only be transmitted over quite short distances, by visual signalling. Signalling lines for transmitting messages were established at several places. As such are to be reckoned the beacon fires, which announced, in the reign of Elizabeth, the approach of the Armada; later, the system of coast intelligence positions devised by the English clergyman, Murray; and, finally, the heliograph lines, still used to some extent. All these means were, however, valuable, more from a tactical than a strategic point of view, and even the heliograph has not been able to attain any very great importance for naval strategy. Nothing

existed in addition except the primitive means of communication over land and sea, with their slowness and uncertainty. The land communications must not be overlooked, as they also played a part in naval warfare. The Mediterranean, for example, could be reached from England considerably more rapidly overland than by the all-sea route. The conveyance of despatches over sea by light, fast vessels was, of course, a most important service, and in the case of the principal naval Powers, especially Great Britain, was very well organized.

Care must be taken not to over-estimate the practical effect of the slowness of communication. The requirements were correspondingly smaller. Time was not then reckoned in hours, but in days and weeks. It would therefore be incorrect to assume that, owing to the slowness of communication, Commanders-in-Chief were compelled to be very much more independent than at the present time. Independence there was, where it was designedly granted, or where character and initiative forced it, otherwise not. The danger of the attempt being made to direct too much from one centre, may have been less than to-day, but it always existed; and the complaints of British Admirals at all periods that the Lords of the Admiralty wished to direct everything from London, are good evidence of this.

The uncertainty of communication was also a very important consideration. It had to be looked at from a very wide aspect. Occasionally, even, war stratagems were based on it. Tourville's plan of operations against England in 1690 provided for a vessel with false despatches on board being captured by the British. In consequence of this uncertainty the naval bases were of great importance to the Order-transmitting and Intelligence Service, for which they formed relay-posts and collecting stations. To secure the strategic lines of communication by a chain of fortified bases was one of the main tasks of strategy. The British, in particular, recognized this at an early date. As the principal lines of communication always coincided with the main trade routes, these bases served for the control of the oversea trade, as well as for interrupting or threatening the enemy's communications. They had, of course, to serve many other purposes, to which reference will be made when dealing with the Supply and Repair Service.

II. MODERN TIMES, THEIR REQUIREMENTS AND THE MEANS AVAILABLE.

Although telegraphic communication is characteristic of modern times, the Intelligence and Order-transmitting Service still cannot wholly do without the despatching of persons and letters. A telegram is frequently not able to take the place of a written order or report, and the clearest and most detailed written despatch may not be able to render the personal

element unnecessary. When telegrams and written orders did not cause Admiral Persano to put to sea in 1866, the Italian Minister of Marine sent his Adjutant to him. It would have been still better if he had sent another Admiral, as Napoleon did when he ordered Rosily to Cadiz to replace Villeneuve. The means of communication represented by the despatching of written messages and of persons, are still of importance for naval strategy, and will always remain so.

A. The Despatching of Persons and Letters in the Order-transmitting and Intelligence Service.

If steam, or machinery, has brought the demand for rapidity in work and communication in modern times, it has at the same time satisfied this demand by providing the present-day possibilities of rapid transit over land and sea.

1. MEANS OF COMMUNICATION OVER LAND.

The means of communication over land are the railways and the vehicular traffic running in connection with them—to-day, motor cars, in the future, aeroplanes and airships. The lines of communication and traffic routes over land are only of interest from the point of view of naval strategy when they permit a more rapid or a more reliable attainment of the object aimed at than the sea route would. If they are in the undisputed possession of one Power, they form a part of his naval strategic communications. Their importance increases if there is a naval base at, at least, one end; as, for example, Vladivostok on the Siberian Railway.

A brief consideration shows their conditional value. Such lines as the American and Canadian Pacific Railways, the Siberian Railway, and the French railways which connect the Atlantic Ocean with the Mediterranean, are like the American, Russian, and French overland telegraph lines, of great importance to their possessors, as they are securely under their control and withdrawn from hostile interference. Lines which run through neutral, or hostile country, can obviously only be used by belligerents for the transmission of intelligence under specially favourable circumstances.

The Flying Service will in the future always be used to extend the land lines of communication seawards from the terminal bases. At the present moment it is still so little developed that it may be passed over here.

2. MEANS OF COMMUNICATION OVER SEA.

The transmission of persons or letters over sea in war will generally have to be undertaken by the Navy itself. It is not necessary, therefore, to speak here of the trade sea routes.

Reference need only be made to the special rôle of those canals (e.g., the Suez and Panama), which shorten these routes. Naval strategy has, from the point of view of the Order-transmitting and Intelligence Service, an interest in the neutralization of these waterways in war, as has been done in the case of the Suez Canal; only in this way can they be kept always open.

B. Telegraphy as an Instrument of the Order-transmitting and Intelligence Service.

The belligerent who is more rapid than, and gets a start of, his opponent, has an advantage strategically. For this a reliable and speedy transmission of orders is an absolute necessity. Telegraphy offers the best guarantee for quick communication, and it is therefore of the greatest importance for naval strategy. There are two distinct systems:—(1) Telegraphy over wires; and (2) wireless telegraphy.

(1) TELEGRAPHY OVER WIRES.

Telegraphy over wires is in use for land telegraphs and sea cables.

Land telegraphs are technically the most reliable. As already pointed out, however, they can be used for war purposes only if they go through the belligerent's own territory. The lines of friendly neutrals, or neutrals on whom some pressure can be exerted, can be conditionally used in war. Generally speaking, only the trans-Continental telegraph lines, which connect ocean with ocean or sea with sea, are of importance from the point of view of naval strategy; but these are generally only a link in the chain formed mainly by the sea cables. In most cases these latter are considerably more valuable for naval strategy than the land telegraphs.

The most important distinctions strategically between sea cables and land telegraphs arise out of their different legal position in war. The sea is free, the land is not. One consequence of this international legal maxim is that the cables which utilize the sea are exposed to the arbitrary action of the belligerents, no agreement having been arrived at up to the present for their protection. It is obvious that the enemy's cables must be destroyed, although where these lead to a neutral country this will only be done when urgently necessary. The land telegraph lines belonging to the enemy may, indeed, also be destroyed if the belligerent has the power to do so. Whilst neutral land lines are inviolable, this is not the case as regards neutral sea cables. At least, the latest international agreements are silent on this point. Neutral land lines will, therefore, as already stated, remain to a certain extent open to the belligerents. Neutrals will, however, probably be on their guard against the utilization of their sea

cables by belligerents, in order not to render these liable to be cut by the one whose interests are injured. An occasional telegram, so worded as not to attract attention, may perhaps slip through, but no more. The belligerents are therefore dependent on their own cables.

On first consideration it appears as if it would be difficult for a Power to protect its cables when another has the command of the sea. Theoretically, cable steamers can cut a cable whatever the depth at which it is laid. They must, however, know the route of the cable, which is kept secret as far as possible, and the weather must be favourable. Consequently, in practice it has been found that the locating on the high seas of a cable whose exact position is not known presents very great difficulties.¹ Cables are naturally most vulnerable in shallow water near land, that is to say, at their landing places, and therefore it is absolutely necessary that these should have military protection. They are also in considerable danger if they lie in shallow water near the enemy's coasts. In such positions the command of the sea can give only slight protection to the cables. Cables which belong to a belligerent and connect different portions of his own territory, but land at neutral intermediate stations, can only be regarded as conditionally utilizable. First, considerable difficulties may arise in telegraphic communication with these intermediate stations; and, secondly, the cables cannot be protected at the neutral landing places, but must be left under the control of the neutral. But even the sympathetic neutral will generally draw back if the position of his friend is critical, and it is in such cases that the latter is most in need of telegraphic communication. The energetic cable policy adopted since the nineteenth century by all Powers is thus understood. By far the greater number of the sea cables of the world are in the hands of private companies, and have only been laid for commercial reasons. This has various disadvantages from the point of view of naval strategy. First, the cables are very numerous to places where they are likely to pay. For obvious reasons, owing to the large outlay of capital necessary, places with which there is not very much traffic are not too well served. There are also, however, strategically important lines of communication in waters in which there is not very much traffic. Secondly, the financial interests of the cable companies do not generally allow the cables to run exclusively to places which are in the possession of their own country. Thirdly, the maintenance of the secrecy of military telegrams, which is so important, and the immediate transfer of the cables to the Government in case of war can only be attained if there are special agreements or laws to this effect. Consequently, not

¹ In the Spanish-American War, in spite of attempts made for weeks, the Americans could not destroy the cable between Jamaica and Santiago de Cuba. It did not come into their possession till the fall of Santiago.

only a national, but a Government, cable policy is a strategic necessity. It will be shown later how far the various countries have adopted these principles.

From what has already been said, it will be seen that even under the most favourable conditions, telegraphy over wires has various defects:

(i.) As it relies on land lines or sea cables, telegraphy over wires bridges land and sea, but does not command them. That is to say, the telegram still has to be transmitted on board from the terminal station by some means or other.

(ii.) Land and sea telegraphs form together a chain which, in most cases, is not perfect, because it touches foreign territory at one or more places. Only nations which have possessions in all seas, can form with their aid lines of communication which satisfy the demands of naval strategy.

(iii.) The military security of a system of cables is necessarily imperfect. Even the attainment of the command of the sea does not completely protect the cables from being cut by the enemy.

(iv.) The maintenance of such a system means very heavy expenditure, as in the case of strategic lines profits cannot be expected.

It is obvious, therefore, that any system which has not the disadvantages of telegraphy over wires, and is capable of supplementing or replacing it, would be welcomed. Such a system is to be found in wireless telegraphy.

(2) WIRELESS TELEGRAPHY.

The following are the military advantages of wireless telegraphy:—

(i.) Wireless telegraphy bridges land and sea, and it does not matter if neutral or hostile territory lies in its path. As it is not dependent on a connecting cable, its material is invulnerable so long as the receiving and transmitting stations are secure. As these latter can be placed far inland, wireless telegraphy is very safe as regards attack from the sea, and thus has an important advantage.

(ii.) It is possible for anyone within the range of a wireless station, whether he is on land or at sea, to receive its messages. This characteristic not only renders it specially suitable for the transmission of messages between cable stations and ships, but also enables a chain of wireless telegraph stations to intercommunicate with vessels fitted for wireless telegraphy, that cruise between them. It may therefore be said that wireless telegraphy not only bridges the sea, but actually commands it.

This capacity of wireless telegraphy makes it of inestimable value for the directing of war. Whilst formerly fleets carrying out operations could not receive information or orders

for long periods, now, if sufficiently numerous and powerful wireless telegraph stations are available, they remain in constant communication with the directing authority. The difficulty of the Spanish Admiral Cervera, who during the whole of his voyage across the Atlantic had no idea where the American fleet was, could to-day be avoided. The position of an American fleet in a war between the United States and an East Asiatic Power may also be considered. During a voyage from San Francisco to the Philippines, a fleet could formerly only communicate its position indirectly at bases which were cable-landing places (e.g., Pearl Harbour, Midway Island, Guam), and at other times had to remain without information during the voyage. Now, the Pacific Ocean is practically bridged by wireless telegraphy, and the naval forces remain, except for brief interruptions, in constant communication with the Central Intelligence Service.

With rapidly changing war situations, continuous communication is equally important for the issuing of orders to a fleet, as it may be necessary, on account of the enemy's operations or the movements of other forces of the belligerents, to revise previous instructions. Wireless telegraphy has made this much simpler, and now much valuable time can be saved.

(iii.) The construction of wireless telegraph stations is cheaper than the laying of cables, and, in some cases, even cheaper than land lines, which, in remote tropical regions and deserts, for example, are very expensive.

The following disadvantages have to be set against the foregoing advantages :—

(i.) The technical reliability of wireless telegraphy is less than that of telegraphy over wires. This disadvantage is, however, compensated by the advantage that a wireless telegraph station provided with reserve parts and tools, is able from its own resources to undertake immediately any repairs. If a cable is broken or damaged, a long time and varied work are necessary for its repair. This favourable characteristic of wireless telegraphy is more important in war than in peace.

(ii.) The reliability of telegraphic transmission by wireless is also less, on account of it being dependent on the electrical condition of the atmosphere. In spite of the progress that has been made in this respect, wireless telegraphy communication is still often impossible for days in unfavourable (e.g., *tropical*) regions. Many stations situated at a great distance from one another are limited to communication by night, which is easier.

(iii.) Wireless telegraph communication can be interfered with by other (hostile) stations—intentionally or otherwise. The progress of technical science, however, promises to lessen this disadvantage. Generally, intentional disturbance by the enemy will only be successful when he entirely interrupts his own wireless telegraph communication.

(iv.) The difficulty of keeping wireless telegraph messages secret appears to be the chief disadvantage, and the fear of receiving instruments in the neighbourhood is one of the principal objections to wireless telegraphy. This can, however, be got over to a considerable extent by special signalling methods, the use of signal books, cyphers, etc.

(v.) Wireless telegraph communication is at present slower than communication over wires. A Marconi telegram between New York and London takes about two hours longer than a cable message. At greater distances, assuming a sufficient number of stations suitably distributed, the difference would, of course, be still greater, as re-transmission would be necessary. The range of wireless telegraphy has, however, become so great that this disadvantage scarcely exists now.

It will therefore be seen that wireless telegraphy does not make telegraphy over wires entirely superfluous, but advantageously supplements it, and that it has already become a very valuable instrument of the Order-transmitting and Intelligence Service. Wireless telegraphy is able to form an independent system of communication, and to supplement and extend the system formed by cables and land wires.

From the disadvantages of telegraphy over wires and the advantages of wireless telegraphy enumerated above, the following conclusions may be drawn :—

(i.) Countries whose position as regards cables is strategically favourable, will make use of wireless telegraphy :—

(a) By establishing chains of wireless telegraph stations parallel to the lines of communication formed by their cables, in order to have a reserve for these and to utilize the military advantages of wireless telegraphy, particularly its power of commanding the sea.

(b) By constructing independent chains of wireless telegraph stations where strategic cables are too expensive, or the laying of cables is not possible on account of the nature of the sea bottom (e.g., off the Cape of Good Hope).

(c) By installing single wireless telegraph stations at the termini and at central points of the cable system in order to supplement it and to widen its area of communication.

(ii.) Countries whose position as regards cables is strategically unfavourable will be obliged to make wireless telegraphy take the place of telegraphy over wires.

III. THE TELEGRAPHIC LINES OF COMMUNICATION OF THE PRINCIPAL NAVAL POWERS.

A. Great Britain.

I. STRATEGIC TELEGRAPH LINES.

The greatest number of the cables of the world are in British hands, but, for reasons already mentioned, most of them are

privately owned. Consequently, almost all British cables laid before 1894 touch foreign territory at one or more points. The British first felt the need of altering this state of affairs when the British cable monopoly was broken down at the termination of the 19th century. Credit is due to British Imperialism, and especially to Mr. Joseph Chamberlain, for starting the policy of national all-red lines. This change of policy came opportunely at the time of the telegraphic spanning of the Pacific Ocean. This was carried out by the British, in accordance with the above-mentioned policy, as a strategic, that is to say, a national and Government undertaking.¹ The line already constructed between Queensland and New Caledonia was not utilized because it touched French territory. The new cable, which connected Vancouver, Fanning, Suva, Norfolk Island, and Southport (Queensland), and Norfolk Island with Doubtless Bay (New Zealand), avoided even the American Island of Honolulu, although this would have been its natural station from a commercial point of view. Of course it was worked at a loss (in 1908-09, estimated at £67,500).²

At Vancouver the Canadian land lines form the continuation of this system. A telegraph line of the Grand Trunk Pacific Railway has been placed under the Pacific Cable Board for the exclusive use of the system. As Canada and Great Britain are connected by several cables, it would naturally be expected that the strategic communications between England, Canada, Australia, and New Zealand should give no cause for complaint. But, as a matter of fact, criticism is still heard. The companies which own the cables across the North Atlantic are apparently bound by no agreements authorizing the transfer of their property to, or at least its control by, the Government in time of war. Complaints are also made regarding the absorption of the undertakings by American capital. Consequently the laying of a Government cable between Great Britain and Canada is recommended. It has, however, not yet been decided on. It is, indeed, to be assumed that in case of war these private cable companies can be compelled by special laws to carry out war duties. In addition to the cables, Great Britain also has wireless telegraph communication available, namely, between Clifton and Glace Bay.

The above-mentioned strategic line describes for Great Britain a semi-circle round the Western half of the earth. It is closed by a line which, although it does not belong to the Government, was laid with State assistance, and its route marks it as a strategic line. Laid by the Eastern and the

¹ The cable is under the Pacific Cable Board; that is to say, jointly under Great Britain, Canada, New South Wales, Victoria, Queensland and New Zealand.

² Touching at Honolulu was proposed (in Parliament), but the proposal was rejected by the Government as the cable was only to touch British territory (see *The Electrical Review*, 1908, page 773).

Eastern Extension Telegraph Companies, it connects England, Madeira, St. Vincent, Ascension, St. Helena, Cape Town (land line to Durban), Mauritius, Rodriguez, Cocos Island, Perth, Adelaide (connection with the Australian land lines). The all-red scheme was, at the outset, almost wrecked by this private undertaking; it has, however, proved an excellent supplement to the other, which brings British South Africa into strategically reliable communication with England. The Eastern line has been criticized because it touches at foreign territory, but it only does this at two places, Madeira and the Cape Verde Islands, both belonging to Portugal, a country which has for a long time been very dependent on England. Even if the line of communication should be broken here, all the other places in the circle could always be reached from the West. The circle is therefore of very great strategic importance. There are various subsidiary lines connected with this main circle, such as the Halifax, Bermuda and West Indies¹ line, and the Mauritius, Seychelles, Zanzibar, British East Africa and Aden line, but they belong to private companies. The last-mentioned line might be of importance for communicating with India and East Asia, if the Mediterranean line should be interrupted.

The telegraphic communication with India and East Asia is entirely in the hands of independent private companies. Those lines which only touch at British territory run from England to Gibraltar, Malta, Alexandria, Suez, Aden, Bombay, Madras, Penang, Singapore, Labuan, and Hong Kong. Their strategic importance will be seen by a glance at the map. They have a weak point perhaps in the Mediterranean. On the other hand, the large number of Mediterranean cables provides a strong reserve.²

With the two groups, (a) the circle England, Canada, New Zealand and Australia, South Africa, England; and (b) the line from England to Gibraltar, Malta, Egypt, Aden, East Indies, Singapore, British Borneo and East Asia, we have given the most important strategic cables of Great Britain. Lack of space prevents us from dealing more fully with their ramifications.

This magnificent strategic system is still felt to be imperfect, mainly on account of the military disadvantages which are practically inseparable from cables. Consequently, the Coronation Imperial Conference of 1911 recommended an Imperial linking up by wireless, and not the extension of Government cables.

¹ The connection between Bermuda and the British West Indies is not yet all British.

² Moreover, these are constantly being added to. For example, the Eastern Telegraph Company intends laying a new cable from Gibraltar to Alexandria, via Malta. (*The Electrical Review*).

2. STRATEGIC WIRELESS TELEGRAPH LINES OF COMMUNICATION.

The development of an Imperial strategic wireless telegraph system is now aimed at, about £1,500,000 having been voted for it. According to Press reports, it is to consist of 25 stations, each having a range of 3,000 miles. The agreements for their construction have already been drawn up between the Marconi Company and the Postmaster-General, under whose control they will later be placed. The stations will, of course, all be on British territory. As this system is in the first instance a strategic undertaking, a profit is not to be expected from it. Quite logically there is to be provided an annual contribution of £10,000 for each station, making £250,000 altogether, or one-sixth of the capital outlay. Details regarding the scheme cannot be ascertained at present. The only thing certain is that there will be a Western and an Eastern main chain. The Western chain will probably consist of the following links:—England, Gibraltar, Malta (already constructed), Egypt (connection to South Africa), Aden, Bangalore (East Indies), Colombo, Singapore, Fremantle¹ (connection to Hong Kong). The Eastern chain will probably include England, Glace Bay (already constructed) (connection to West Indies), Winnipeg, Vancouver, an island in the Pacific yet to be selected, New Zealand and Australia.² Up to the present the stations commenced are those in Egypt, Aden, Bangalore, Pretoria and Singapore; in addition, the Australian Commonwealth is having several of its stations erected. There are already wireless telegraph stations in the West Indies at Jamaica, Trinidad, Tobago, and British Guiana, which can be included in the Eastern chain. Moreover, stations are projected in the Barbadoes, Bahama, and British Honduras.³ It is understood that there will be subsidiary chains to the East and West coasts of Africa and Cape Town.

This great scheme will provide (1) a system parallel with the strategic cables (the line from England, via Canada, to Australia, as well as the line from England, via the Mediterranean and India, to East Asia), and (2) an independent system where there are no cables of strategic character (the African line).

As most of the wireless telegraph stations will be at junctions (e.g., Bangalore and Winnipeg, etc.), or termini (e.g.,

¹ A high-power wireless telegraph station is under construction at Fremantle. The Australian Prime Minister has stated that it is hoped that it will be able to communicate with Singapore.—*Standard*, March 15th, 1912.

² Originally, apparently, Cyprus was thought of instead of Egypt. According to Press reports, Bangalore was selected in lieu of Bombay.

³ Reply to a question in the House of Commons.—*Times*, March 21st, 1912.

Gibraltar and Singapore, etc.), of cables or land lines, they will also serve to supplement those lines by transmitting telegrams on board ships.

In consequence of the characteristic of ubiquity referred to in speaking of the advantages of wireless telegraphy (page 1035, par. ii.), Great Britain, by means of her all-red project, will not only bring her oversea possessions and bases into better strategic communication with herself and with one another, but, what is much more important, she will ensure that every British ship on seas lying between these possessions will be in the future in constant communication with the home country. Warships will be able to receive orders at any moment, and merchant vessels to be informed concerning anything of importance, for example, danger of war, outbreak of war, appearance of hostile commerce destroyers, etc. Great Britain has therefore brought under her sway, from the point of view of the Intelligence Service, the North Atlantic Ocean, the Mediterranean, the Red Sea, the Indian Ocean, the greater part of East Asiatic waters, the central portion of the Pacific Ocean and West Indian waters, as well as a large part of the South Atlantic and the South Pacific Oceans.

B. France.

I. STRATEGIC TELEGRAPH LINES.

When Great Britain, during the Boer War, brought into force a censorship of African telegraphic communication with South Africa, which at that time was completely under her control, France saw that, as the second Colonial Power of the world, she could no longer do without a cable system of her own. With a correct recognition of the strategic requirements, the following principles were laid down :—

The cables are to be laid by the Government, unless there are international reasons against it.

Cables are, as far as practicable, to land on French territory or that of friendly Powers. In the latter case the lines are soon to be doubled, other landing places being selected, in order to keep the cables as much as possible independent of a single foreign Power.

Whenever possible the cable is to be laid in deep water.

The landing places in French territory are, if practicable, to be fortified places (naval bases).

Energetically carrying out these principles, France has formed the largest Government cable system in the world. The only French private cable company, the *Compagnie Française des Cables Télégraphiques*, is rigidly bound by comprehensive agreements with the Government.

France's strategically most important lines of cable communication are those which run from the mother country to the French possessions in the Mediterranean, and to the coast of French West Africa. The French cable system in the Mediterranean is very extensive. All important points are connected with the mother country, and most of them also with one another, by sea cables or land lines. Two cables run to Corsica (from Toulon and Antibes), which is also in communication by means of French cables with Sardinia and Leghorn. From Marseilles one cable leads to Bizerta, three to Algiers and one to Oran. Bizerta is connected by cable with Tunis, from which place land lines run to the other Tunisian ports (a cable to Yerba Island). Algiers has overland communication with Oran and Tunisian ports. From Oran a cable runs to Tangier, which can also be reached by means of a French cable from Spain (Cadiz).¹ In addition, there is a cable from Brest to Dakar; from here all the West African possessions can be reached.²

So far, the position of France is favourable, but she also has interests and bases in other parts of the world, namely, in Madagascar, Réunion, Djibuti, Pondicherry, Indo-China, New Caledonia, Tahiti, the Marquesas Islands, Martinique and French Guiana. These are connected up in groups, but are not joined to the mother country by French cables.

2. STRATEGIC WIRELESS TELEGRAPH LINES OF COMMUNICATION.

At present France can only communicate by wireless telegraphy from Paris to Corsica, Bizerta, Algiers, Oran, Fez, Tangier, and Casablanca³ (a system running parallel with her cable connections). There are, however, already official plans for the provision of an all-French wireless telegraph system. On the opposite page is shown the scheme worked out by M. Messimy, of the Wireless Telegraphy Committee. It shows how the defects in the strategic cable communications are to be made good by wireless telegraphy.

The proposals really comprise two schemes, an African scheme and a world scheme, though they are closely connected. The object of the African scheme is to provide

¹ With this object France purchased several cables belonging to the West African Telegraph Co. (Dakar to Conakry; Grand Bassam—Kotonou—Libreville). Conakry and Grand Bassam are connected by land lines.

² Also to Rabat, Mogador, Asemmur, Sefru, Mazagan (projected), and Saffi (all in Morocco).—*Elektrotechnische Zeitschrift*, No. 7, 1912.

³ For 1912 £31,000 was demanded for the stations at Colomb Bechar and Kotonu. This was not voted. The necessary strengthening of the Eiffel Tower station, however, is being carried out, the transmitting power being increased six times, and the range doubled.

strategic communication with the new French domains in Africa. For this purpose several central high-power wireless telegraph stations (Colomb Bechar, Timbuctoo, Bangui) are projected; these are to be in direct communication with Paris and also with a large number of coast stations, including Djibuti and Madagascar, which up to the present have had no entirely French means of communication. Those African stations which are necessary for the world scheme, would also be high-power stations. A French circle round the earth would then run from Africa (Djibuti) East to Pondicherry, Saigon, Noumea, Tahiti, the Marquesas Islands, Martinique, and back to Africa (Dakar). In addition to the Mediterranean, there would be commanded by French wireless telegraphy the Indian Ocean, the South Sea, a large part of the Pacific Ocean, and the middle, as well as part of the North and South Atlantic Ocean. France would thus be able on those seas to share in the advantages referred to above when speaking of British communications, provided that the scheme is carried through, and the money necessary is voted and not struck out, as has been the case hitherto. In consequence of her good relations with Great Britain, the need for strategic lines of communication is not very great at present.

The Messimy Wireless Telegraphy Scheme.

(*Projected and Completed Wireless Telegraphy Communications*).

Eiffel Tower, Paris, connected with Bizerta, Algiers, Oran and the Moroccan Ports—Casablanca, Tangier, Rabat, Mogador, Asemmur, Sefru, Saffi (Fez).

Station.	Communication projected with	Remarks.
Eiffel Tower, Paris ...	Colomb Bechar, Rufisque, Timbuctoo, Kotonou, Bangui.	—
Colomb Bechar ...	The Algerian, Tunisian and Moroccan Ports, Timbuctoo and Lake Tchad stations.	The Lake Tchad stations are constructed.
Rufisque, Kotonou and Timbuctoo	Port Etienne, Dakar, Konakry, Monrovia, Tabou, Grand Bassam.	Existing W/T stations (except Grand Bassam).
Bangui, Kotonou ...	Loango, Brazzaville, Libreville, stations on Lake Tchad.	Existing W/T stations.
Bangui	Djibuti, Tananarivo.	Projected high power stations.
Tananarivo	Djibuti, Diego Suarez, Mayunga, Mayotte, Réunion.	Existing W/T stations.
Djibuti	Pondicherry, Saigon.	Projected high power stations.
Djibuti	Hanoi, Hué, Cape St. Jaques.	Existing W/T stations.
Saigon	Nouméa.	—
Nouméa	Tahiti.	—
Tahiti	Marquesas Islands.	—
Marquesas Islands ...	Martinique, French Guiana.	—
Martinique	Rufisque.	—

C. United States.**I. STRATEGIC TELEGRAPH LINES.**

Telegraphic communication with the American possessions in the Pacific Ocean and the West Indies is, of course, the main requirement of American naval strategy. The islands of the Pacific were connected in 1902-3 by an American cable system running from San Francisco to Honolulu, Midway Island, Guam, and Manila. This is in the hands of a private company (the Commercial Pacific Cable Company), but under conditions which permit an immediate transfer at any time to Government working.¹ These are based on the valuable experience obtained by the United States during the war with Spain. Since 1907, Havana and Guantanamo have been connected with New York by an American cable, and it is very significant that the cable from Guantanamo is now extended to Colon, that is, to the Panama Canal zone.

The importance of the trans-Continental telegraph lines of the United States need not be emphasized. The American possessions, as far as telegraphic communication is concerned, form a complete whole. There is one disadvantage, namely, that until the Panama Canal is completed, a fleet proceeding from the Atlantic to the Pacific Ocean in war, soon gets away from reliable telegraphic communication with the home country. In this respect the United States are in almost as bad a position as Russia, which has only laid land lines between the Baltic, the Black Sea, and the Sea of Japan, these being separated from the sea routes by wide stretches of land in foreign possession. In such cases the only thing to be done is to supplement the telegraph lines as far as possible by wireless telegraphy stations at their termini, or to endeavour to manage by using neutral cables.

2. STRATEGIC WIRELESS TELEGRAPH LINES OF COMMUNICATION.

Mr. Meyer, Secretary of the Navy, has submitted to Congress a proposal for the construction of a very powerful station at San Francisco. By means of this station, the Panama Canal Stations (the wireless telegraph station at Colon is to be strengthened), and the Army wireless telegraph stations, continuous wireless communication is to be provided for between the Atlantic and Pacific coasts.² This is at present only attained under specially favourable atmospheric conditions.

¹ The Government can acquire the cable at any time at a price to be estimated by an Arbitration Court, and in case of war take over the working of the cable and cancel all the Company's agreements with foreign countries or companies. The officials must be American citizens. No compensation is to be given for any fall in receipts owing to censorship in time of war or to similar causes.—*Journal Télégraphique*, 1912, page 239.

² According to the *Army and Navy Journal*, February 10th, 1912, about £205,500 is demanded.

The provision of a complete chain of wireless telegraph stations in the American possessions in the Pacific Ocean, communicating with one another and with the home country, can only be a question of time. The high-power station at Honolulu has already succeeded in communicating with Mare Island (2,098 nautical miles), and this latter station with Key West (2,205 nautical miles). The messages between the two last-named stations were also taken in by the Newport (Rhode Island) station. In view of the great interests which the Americans have in the Pacific Ocean, it is obvious that they will endeavour to command it with their wireless telegraphy. The weakness of the American system at present is that, although it covers the waters off the East and West coasts of North America by means of its existing high-power wireless telegraph stations, it does not extend over those of South America. So long as the Panama Canal is not completed, a fleet proceeding from the Atlantic to the Pacific must take this route. It will therefore have to be outside the range of the national intelligence service for weeks, and thus removed from the control of the central naval authorities. The strengthening of the South American States justifies the assumption that they will maintain a strict neutrality. The position will, however, be entirely changed when the Panama Canal is completed and the high-power wireless telegraph stations within its zone are ready. The fleet will then be continuously in touch with the Intelligence Service. Herein lies the great importance of the Canal. The wireless telegraph chain across the Pacific Ocean would also enable the fleet to keep in touch with the home country, and with Washington if it were ordered to East Asia.

D. Other Countries.

RUSSIA.—The position of Russia has already been indicated. Her trans-Siberian land lines make her independent of foreign cables. Her Intelligence Service has, however, no command of sea routes. At the present moment, as during the war with Japan, Russia is only able to communicate with her fleets when they go on long voyages if benevolent neutrals (Great Britain or France) give her the necessary facilities. Russia endeavours to increase the number of neutral cables available by supporting the "Great Northern Telegraph Company" (*Det Store Nordiske Telegraf-Selskab*) formed by her in Copenhagen. This company laid the cable from Vladivostok, via Nagasaki and Shanghai, to Hong Kong, and owns the cable communications between Denmark and Norway, England and Russia, Sweden and Russia, all starting from Denmark, so far as they are not in the possession of the Government, the cable from Calais to Fanö, a cable from Sevastopol to Varna, and a cable from Odessa to Constantinople. To a certain extent Russia

could, indeed, rely on most of these lines of communication in case of war. On the Baltic coast, Russia has eight wireless telegraph stations, and on the Aland Islands a ninth. These are sufficient for commanding the Baltic. In East Asia great efforts are being made to extend as much as possible the Russian wireless telegraph service. At Petropavlovsk and Nikolaievsk there are high-power wireless telegraph stations (having a range of over 1,000 km.=621 miles) ready for use. There are also stations under construction or projected at Kharbin, Vladivostok, Khabarovsk, Maruinsk, Okhotsk, and even as far north as Gizhiga. A naval force operating from Vladivostok would be able, after the completion of these stations in the Japanese and Okhotsk Seas, to remain continuously in communication with its base. The Black Sea and the Sea of Azov are covered by wireless telegraph stations at Odessa, Sevastopol, Jalta, Tanganrog, and Batum. In this way, in those seas which are important from the point of view of naval strategy, Russia has extended as far as possible the range of her Intelligence Service. The advantages which are offered by the oversea chains of wireless telegraph stations established by the British, French, and Americans, cannot be realized by the Russian Empire, as it lacks the one essential condition, namely, favourably distributed oversea possessions.

JAPAN.—It is characteristic of the clear views held in Japan that, as regards Government ownership of cables, she holds the third place. Japan has linked up all her possessions in East Asia by Government cables, and also has numerous connections with the cables of foreign countries. Several Japanese high-power wireless telegraph stations are completed. Those at Otsuchi (in Jesso), Choshi (near Yokohama), Shiomisaki (East Coast of Nippon), Osezaki (near Nagasaki) and Tsunoshima (South-West coast of Nippon), all have ranges of 1,200 to 2,000 kilometres (746 to 1,243 miles). By means of these stations the Japanese are able to cover the Sea of Japan and a part of the Yellow Sea. The Fukkikaku wireless telegraph station in Formosa is of importance for the command of the Formosan Straits. The high-power wireless telegraph stations on the Japanese coast, bordering the Pacific Ocean, have not apparently sufficient range¹ in order to satisfy the requirements of Japanese naval strategy. The report that a very powerful wireless telegraph station is to be erected on the Bonin Islands is therefore quite credible. These islands are connected with Yokohama by cable.

ITALY.—It is impossible for Italy to connect her possessions, that do not border the Mediterranean, to the home country by strategically safe cables, as there are large territories separating

¹ In November, 1911, a Japanese steamer succeeded in taking in messages from the station at Choshi at a distance of 3,210 nautical miles, and in interchanging messages at a distance of 1,500 nautical miles.

them which are not under her jurisdiction, and are only pierced by the Suez Canal. She has now established wireless telegraph communication with them via Coltno, Massana and Mogadiscio.

GERMANY.—Apart from Austria-Hungary, which has no oversea possessions, the German Empire is now the only great Power which has neither trans-oceanic cables nor a wireless telegraph system that corresponds with the requirements of naval strategy. It is apparently planned to utilize wireless telegraphy in order to connect up for world traffic the German islands in the South Sea, which in most cases at present have no means of telegraphic communication. The projected high-power wireless stations at Yap-Rabaul, Nauru, and Samoa will be in accordance with this object.

B. THE TECHNICAL MEANS OF THE SUPPLY AND REPAIR SERVICE.

(Auxiliary for the Maintenance of the Naval Forces.)

I. THE SAILING SHIP PERIOD, ITS REQUIREMENTS AND THE MEANS AVAILABLE.

It is going too far to assert that the sailing ship fleets were, in the main, practically independent of outside aid for their maintenance, and that they gave the strategists no anxiety or work in this respect. It is necessary to distinguish between two groups, the requirements of the material and those of the personnel. Those of the material may have been much less than at the present time, but those of the personnel were at least equally great, and at that time nothing like the same means were available for satisfying them as exist to-day. The material of a sailing ship fleet, however, requires to be cared for and made good. Reference is frequently made to the case of Suffren, who, during the American War of Independence, very successfully commanded a French squadron in West Indian waters, although he had practically no base from which to operate; but it must be remembered that the proceedings of this Admiral form an exception, and not the rule. Moreover, he only had a small fleet under him. It would be incorrect, in judging the size of the fleet, to apply modern standards. To-day, a fleet is regarded as very large if it includes 16 or 17 battleships, but at that time a large fleet consisted of 30 or 40 battleships. The main point, however, is that Suffren was a genius such as the sailing ship period only once produced. De Ruyter and Nelson, who were much more successful in battle, were not the equal of Suffren as regards the maintenance of the material.

If, in the study of naval war history, interest had not been concentrated on the principal battles to the neglect of other

matters—as, for example, unfortunately, the scouting service, and so many other important questions—we should have been able to refer to more numerous and more accessible sources for information bearing on the subject now under consideration. Nevertheless, a brief investigation shows that there was at that time an extensive supply service, the organization of which had an important bearing on the performances of the fleets. The supply of material during the sailing ship period was divided into three groups: that required for (1) the hull, (2) the sails, rigging, etc., and (3) the armament. The hull required only simple material, and that not in large quantities, so long as it continued at all serviceable. Timber was easily obtained and other necessities were usually carried on board. Even large repairs were carried out by the ship's crews. The position was worse as regards the sails, rigging, etc. The necessary spars could be provided for one or two ships, but a fleet as a whole was dependent on outside supplies. It was not a rare occurrence for all the ships of a fleet to be in need of assistance owing to a storm, and without having been in action. In such a case the reserve parts carried were inadequate, and spars, sails, and ropes had to be obtained from the nearest port. In war these replacements could only be made if the necessary stocks were kept at bases near the area of operations. The armaments of the ships were very simple, but a certain amount of replenishing had to be done. Ammunition and guns had to be transported even in the sailing ship period.

In former times, providing for the personnel presented very considerable difficulties, which have to-day entirely disappeared. It is well-known how defective the methods of preserving foodstuffs were a hundred years ago. Ship's biscuit, salt meat, and dried foods were practically the only provisions available for fleets going any great distance, even when starting from the home country. Fresh foods, were, however, necessary on account of the danger of scurvy. These were purchased at places near the fleet's cruising ground and conveyed by frigates, a system which required the most careful organization. The greatest difficulty was the supply of drinking water. Volumes might be written regarding the part which the providing of fresh water has played in naval war history. Whole fleets were at times rendered incapable of moving because they had no water (as, for example, Admiral Mann was, in 1796). At Aboukir a large number of Bruey's men were not on board their ships; they had been sent on shore to fetch water. He was therefore in somewhat the same position as a modern fleet commander would be if he were surprised by the enemy whilst coaling.

Closely connected with these drawbacks were the defective hygienic methods of those times. Nelson, indeed, frequently

improved the health of his fleet in a praiseworthy manner (for example, after the voyage to the West Indies). In the case of his opponent, however, the position was very much worse. Even in the British Navy there were cases of epidemics attacking a whole fleet. At the time of the Crimean War, when cholera claimed a large number of victims, there were still great difficulties in fighting infectious diseases on board ship.

These few considerations show the extensive organization necessary for the supply service in the sailing ship period. A hundred years ago the way in which naval strategists solved the problem of the supply service decided whether the fleets were heavily handicapped or not in their war operations. Generally speaking, the British had this service well organized, and their opponents—the French—had not. The latter's sea commerce and all their industries connected with the shipping trade—shipbuilding, sailmaking, ropemaking, etc.—were seriously injured by the wars with Great Britain, as France was cut off from the sea by the British and could not get in the necessary raw materials. In consequence of this, the French Navy found its sources of supply gradually drying up. This was felt most during the wars of the Republic. The general breakdown produced by the Revolution specially affected the organization of the supply service. The confusion in this department was very great in the time of Napoleon I., as is shown by the letters of the French Admirals (see, for example, those of Villeneuve). Moreover, the French did not have at their disposal anything like such numerous and well-equipped bases as the British.

The importance of bases for the supply and repair services has always been very great. When the British were dislodged from all the Mediterranean coasts, in 1796-7, they could no longer maintain their fleets in that sea. It will also be remembered that it was only through specially favourable circumstances¹ that Nelson was enabled to utilize Syracuse as a base in 1798. If he had not obtained water there, he would have been compelled to go to Gibraltar, and the Battle of Aboukir would not have been fought.² The part that Gibraltar played in the British, French, and Spanish naval wars is well-known. The capture of this rock by Great Britain was a masterpiece of her naval strategists, who have shown in so many instances their capacity for looking ahead. The chain of excellent bases is indeed the most valuable inheritance which the modern British Navy acquired from the old.

¹ The assistance of an influential woman, Lady Hamilton.

² Brueys had already received a definite order from Buonaparte to put to sea. If Nelson's voyage had been delayed, he would not have found Brueys off Aboukir.

II. MODERN TIMES, THEIR REQUIREMENTS AND THE MEANS AVAILABLE.

The supply and repair services are now much more clearly separated from one another than they were in the sailing ship period. Apart from the requirements of the personnel and ammunition, practically everything conveyed to the fleets a hundred years ago was for purposes of repair. To-day, it is not only the personnel which constantly needs certain materials, the regular supply of which is essential to its activity, but also the machinery. The repair service has to meet the requirements of the ship's hull, engines, and armament, whilst the supply service mainly has to keep the ship complete with fuel, ammunition and provisions.

A. The Supply Service.

I. FUEL REPLENISHMENT.

(a) COAL.—Almost all the war vessels of the world are propelled by steam engines, and by far the greatest number make use of coal for producing the steam. The introduction of fuels other than coal is a modern development, and other types of engines are only just being adopted. Consequently, coal replenishment has been the greatest problem for the supply service ever since the transfer from natural to mechanical means of propulsion. The following are the questions which it presents to naval strategy for solution :—

- (i) Where and how can coal be obtained in time of war?
- (ii) Where and how can the coal be supplied to the naval forces in war?

The methods of procuring coal may be classified as 'natural,' that is, when it is obtained from collieries in one's own country, and 'artificial,' that is, when it has to be obtained from accumulated stocks, as in countries which have no natural supplies of steam coal, or only of such poor quality that it is undesirable to use it in the Navy. The following figures show the approximate coal output of the various countries of the world in 1910, in millions of tons :—United States, 445; Great Britain, 268; Germany, 153; France, 38; Austria-Hungary, 33; Belgium, 24; Russia, 24; Japan, 15 (1908-09); British India, 13; Australia, 10; China, 10; Canada, 10; South Africa, 5; Spain, 3; New Zealand, 2; other countries, 6.

When it is considered that a large portion of the total output of coal is not at all, or only to a limited extent, suitable for use in ships, and that a number of these sources of supply have only quite recently become available, it will be seen that the number of navies which have a natural supply of coal is extraordinarily small. Although the coal seams of the earth are far from being completely opened up, there are at the

present time several navies which have to look to artificial supplies. They are therefore confronted with the apparently very difficult task of storing large stocks in time of peace. This necessity is of course very undesirable from an economic point of view, because it means that capital must be allowed to go abroad. As regards the most important economic consideration, namely, the cost, matters are not quite so bad as they appear at first. This is due to a peculiar feature of the carrying trade. Cargo vessels which make a part of their voyage without, or with a small amount of freight, are compelled to carry ballast.¹ There is nothing more natural than that, instead of useless sand and water, they should load up with coal. In this way coal gets to many places for less than the freight charges. Consequently, the number of coaling stations, originally very small, has much increased.

This peculiarity naturally benefits all countries, even those which have natural coal resources, as it facilitates the supply of oversea stations with coal and the establishment of naval coaling stations. Even those navies in whose home-country coal is found, are generally compelled to provide for operations in distant seas, and for this purpose to establish coaling stations at great distances from the home sources of supply. It would be comparatively simple if neutrals, generally, made no difficulty as regards coaling. The reverse is, however, the case. It has become customary to give belligerents only as much coal as they require to enable them to reach their nearest home port. It is stated that a continuance of military operations with neutral aid is thus rendered impossible.

COALING STATIONS.—The natural result appears to be that a Navy must establish coaling stations in all parts of the world. It is obvious that the existence of a number of coaling stations is very desirable, and, in important areas of operations, even an urgent necessity. The outcry for such places was, however, overdone for a long time, especially just when sailing ships were definitely displaced by steamers. At that time the economy of the engines was very small, and the new state of being dependent unreasonably terrified the minds of men. Naval coaling stations have one great disadvantage from an economic point of view—they are very costly. In the first place, considerable quantities of fuel, which are not available for merchant vessels, must be stored at such places if they are to fulfil their objects. Capital is thus tied up and, in addition,

¹ This is the case wherever the cargo which is carried in one direction requires more space than the return cargo, that is, on all the great trade routes of the world. The tonnage of the freight sent from North America to Europe is more than double that sent from Europe. The goods imported into China or Japan need double as much space as the goods exported by these countries.—Russell Smith, "The Organization of Ocean Commerce."

the coal deteriorates by being stored. Secondly, they require to be protected by fortifications in order that this capital outlay may be protected from raids by the enemy. It follows from these considerations that there is a limit to the number which even the most wealthy nation can establish. As has already been stated, however, a certain number of coaling stations is a necessity. The positions in which these must be placed, each Navy has to decide for itself. Positions will be chosen which are also suitable as bases for other purposes, for example, repairing and distribution of intelligence. By providing such bases the British Navy, for example, has formed for itself highways across the ocean, along which its squadrons can proceed without attendant colliers, etc. This ensures to the British in case of war, amongst other advantages, that of speed, which is so important from a strategic point of view.

COAL SUPPLY WITHOUT BASES.—If a fleet cannot rely on bases, then coal must be conveyed to it, or colliers must accompany it. This is possible if a sufficient number of vessels can be hired or purchased, and their safety can be fairly well assured. Coaling can be carried out either at anchor or at sea.

COALING IN ROADS AND HARBOURS.—Coaling at anchor near the coast is possible if benevolent neutrals or one's own possessions can be reckoned on—under certain conditions, even if these latter are undefended, like the coasts of the German African Colonies. One or other is almost always available. Badly protected and unfavourable anchorages will, however, at times have to be used, but they do not make the work impossible.

COALING AT SEA.—Coaling at sea is still a long and difficult operation, but experience has shown that it is quite practicable. The classical example of a good supply of coal without the use of bases is the voyage of the Russian squadron under Admiral Rojdestvensky in 1904-05. Rojdestvensky¹ coaled twice in harbours (Vigo and Gabun) during the voyage from Libau to Madagascar, and six times in badly protected roads, with all the difficulties which are well-known to every seaman. He showed that these difficulties are not insurmountable. After leaving Madagascar, the Admiral coaled the whole fleet eight times on the high seas. The method by which this was done is very interesting. All the heavy and complicated coaling apparatus, which had cost a great deal, and occupied considerable space, was set on one side as unsatisfactory, and only the simplest, the winch and boom, justified their existence.² In the roads the Russians allowed the colliers to come alongside. At sea they coaled from ship's boats, unless the conditions were

¹ The portion of his squadron that went round the Cape of Good Hope is here referred to.

² v. Kravchenko, "Across the Oceans."

specially favourable, in which case the colliers went alongside.¹ With increasing practice, very good performances were achieved, as 40 to 70 tons per hour from steamers not specially equipped, and 20 to 30 tons from ship's boats, must be regarded as such, especially in view of it being done in the tropics.

STRATEGIC IMPORTANCE OF COALING FACILITIES.—The coal requirements of a fleet depend on its composition and its task. It is most difficult to satisfy them when there are interruptions from the enemy, especially after a long run or after a battle. In such cases good coaling facilities for the ships are seen to constitute a strategic factor of the first importance. If such facilities exist, then a Commander-in-Chief runs less risk of being caught at a disadvantage through anxiety as regards coaling his fleet, and he can concentrate his attention on the main object, the battle. Neither a large reserve beyond the anticipated requirements nor even the existence of well-equipped bases are able wholly to take the place of this advantage, especially in the case of offensive warfare, and here again more particularly when the area of operations is very extended.

(b) LIQUID FUEL: AS A SUBSTITUTE FOR COAL.—The advantages accompanying the employment of liquid fuel with steam boilers are well known.² They are particularly great from the point of view of supply. Ships burning oil fuel alone can carry sufficient to take them much greater distances than if coal is used, owing to the fact that the economy of oil is higher.³ Moreover, oil fuel can be transported much more easily, and ships can fill up with it in harbour or at sea more quickly and with much less trouble.

The oil resources of the world have not, however, been very extensively opened up, and those which have been are for the best part worked by private companies. The producers have only just commenced—at present only in the United States—to make great efforts to develop the use of oil fuel in ships and to reduce prices correspondingly. One of the preliminary conditions for an extensive employment of liquid fuel in merchant ships and war vessels is a suitable lowering of the cost. The price depends, on the one hand, on the quantity produced, which will certainly be increased in response to the growing demand, and, on the other hand, in a very complicated way, on the methods of refining the raw product and the use made of the by-products.

¹ Nebogatov coaled several times in this way.

² See *Nauticus*, 1903, page 372.

³ One kilogram (2.2 lbs.) of oil fuel does the same work as one and a quarter kilograms (2.75 lbs.) of coal and takes up 40 per cent. less space in the bunkers.—*International Marine Engineering*.

At the present time the United States and Russia supply nearly all the crude oil, and the former, as the following table shows, a great deal more than the latter:—

CRUDE OIL PRODUCTION OF THE WORLD, 1908 AND 1909.
(*In barrels of 190.8 litres = 42 gallons.*)

		1908.	1909.	1910.
United States of America ..	...	172,527,355	182,134,274	207,849,930
Russia ..	...	62,186,447	65,970,350	—
Sumatra, Java and Borneo ..	...	12,612,295	14,932,799	—
Galicia ..	...	10,238,357	11,041,852	—
Roumania ..	...	8,252,157	9,321,138	—
India ..	...	5,047,088	6,676,517	—
Japan ..	...	3,481,410	2,488,742	—
Mexico ..	...	2,070,929	2,012,409	—
Canada ..	...	1,011,180	1,316,118	—
Germany ..	...	1,009,278	1,018,837	—
Peru ..	...	527,987	420,755	—
Italy ..	...	53,966	50,000	—
Other Countries ..	...	30,000	30,000	—

Except in the case of a few United States' vessels, generally speaking, crude oil is not burnt under ships' boilers, but only a by-product of the refineries. Apart from the United States, oil fuel is used practically only in torpedo craft, for which oil burning boilers are specially suitable. According to Press reports, the installation in small cruisers of oil-burning boilers only is under consideration. Installations to use both kinds of fuel—coal and oil—have also been fitted in various types of vessels, a compromise which at least partly utilizes the advantages of oil fuel.

In the United States the opening up of the oil resources of the country is going steadily forward, as the foregoing table shows, and the amount of oil fuel required by private shipping firms, as well as the Navy, is continually increasing. Now, even the battleships of the United States Navy are being provided with oil-burning boilers. The first to be so fitted are the "Nevada" and "Oklahoma."¹

¹ This has enabled, according to the *Scientific American*, the following advantages to be obtained:—The oil is only carried in the double bottom. Doing away with the bunkers has made available so much space under the armoured deck that the designer was able to place all six boiler-groups in the middle of the vessel, where they only require 20 metres (66 feet) of the total length. Further, it was possible to have only one funnel, this being placed immediately over the boiler rooms, and, an important point, the whole of the uptake could be covered with heavy armour, consisting of plates placed obliquely and having a uniform thickness of 330 mm. (13 ins.). This protection extends from the lowered armoured deck to the spar deck, so that the whole of the uptake within the ship is completely protected from penetration. The importance of this design is clear when it is remembered that the piercing of the uptakes during the Russo-Japanese War contributed largely to the destruction of the Russian ships.

The distribution of the natural sources of supply of oil fuel compels the navies of the world, as in the case of coal, to accumulate stocks in peace to meet war requirements. This necessity varies with the amount of oil fuel produced in this country.

The following provision for storing oil fuel (completed or projected) is known to have been made by Great Britain and France :—

	Reservoirs.	Capacity of each Reservoir in tons.	Remarks.
A.—GREAT BRITAIN.			
Forton Creek (Portsmouth)	4	5,000	{ The total capacity is to be increased to 80,000 tons.
Chatham	?	{ a total of 20,000	
Devonport	11	5,000	
Gosport	4	?	Under construction
Portland	4	?	Under construction
Port Edgar (opposite Rosyth)	?	?	{ Large reservoirs are projected.
B.—FRANCE.			
Calais	2	150	Projected (for Submarines)
Cherbourg	4	2,000	Projected
	2	1,000	Projected
	2	1,000	Under construction
Brest	6	2,000	Projected
	1	500	Projected
Toulon	4	2,000	Projected
	2	1,000	Projected
Ajaccio	4	1,000	Projected
Oran	2	1,000	Projected
	1	500	Projected
Biserta	3	2,000	Projected
	4	4,000	Projected

The total capacity of the tanks owned by the British Admiralty is stated to amount to 500,000 tons at present.

Particularly noteworthy is the policy of the Italian Government, which has subsidized the development of the mineral-oil resources of the country. This has undoubtedly been done to meet the wishes of the naval authorities. Italy is of course specially interested in making herself as far as possible independent of coal, as none suitable for ships is found in the country.

In order to complete the oil-fuel supply service, tank-steamers are, of course, necessary, as liquid fuel cannot be carried in any vessel. In consequence of their low speed, not all tank-ships are suitable for supplying a fleet. The naval authorities of all countries must therefore keep a watch on the number of steamers of this type existing in the merchant navies,

and in some cases will have to construct such vessels themselves.¹ The total number of tank-vessels is increasing very rapidly. In April, 1912, in Great Britain alone, there were 44, with a total carrying capacity of 900,000 tons, under construction (*The Marine Engineer and Naval Architect*, April, 1912). The system of distributing oil-fuel and lubricating-oil in the harbours of the world thus promises rapidly to improve.

FOR USE IN INTERNAL COMBUSTION ENGINES.—The main advantage from a strategic point of view of the internal combustion engine is its economy. As the construction of such engines progresses, it therefore appears as if there will be an increasing demand for them for the propulsion of warships. The possibility of increasing the radius of action of ships is very attractive to naval strategists. It would, of course, also be of great advantage in the case of merchant vessels. As absolute reliability of the engines is not quite of so much importance in merchant vessels as in warships, which are constantly manoeuvring, the former are more suitable for experiments with internal combustion engines.² As is well-known, small engines of this type have already been perfected for marine work, and are extensively used in the submarines of all navies. It may also be regarded as certain that they will soon be sufficiently tested in large merchant vessels to justify their employment for warships. The utility and economy of the small marine internal combustion engine has already been proved.³ Radii of action four or five times as great will be able to be reckoned on.

¹ Great Britain has four, France three, Italy two (also used as colliers), Austria-Hungary one, Russia three (also used as colliers) completed and one under construction, the United States four (also used as colliers) completed and four under construction.

² See the article entitled "Constant-pressure Oil Motors as the Main Engines of Merchant Vessels," *Nauticus*, 1912.

³ A tank-vessel (the "Vulcanus") belonging to the Shell Transport and Trading Co., and fitted with a six-cylinder 500-H.P. Diesel engine consumed the following quantities of oil during a voyage from Rotterdam to London, Constantza, Hamburg and back to Rotterdam:—

	Days.	Hours.	Min.	Nautical Miles.	Cargo Tons.	Oil Consumption.
Rotterdam—London	—	19	45	141	2200	1.8 tons.
London—Constantza	19	4	15	3263	1480	37.5 "
Constantza—Hamburg	20	22	35	3695	2180	42.0 "
Hamburg—Rotterdam	1	19	—	360	1360	2.0 "

An equally large steamer would have required approximately five times as much coal. The favourable results obtained with the 10,000-ton motor ship "Selania" of the Danish East Asiatic Company have also been published. This vessel has a speed of 12 knots and consumes ten tons of oil daily at this speed. Her main engines consist of two 1,250-H.P.

At present it is still difficult to form a correct idea of the full significance of the development of internal combustion engines of large size as the main engines of ships. In any case, if they are successfully introduced, they will greatly assist the work of the fleet supply service. Naval strategists will be able to give their attention to problems quite different from those which they have to solve with the means available to-day. Consequently, all navies are following the development of the internal combustion engine with the greatest interest. Certain of them have already commenced to equip warships with this engine. It is reported that in Great Britain one or two, and in Italy five, destroyers are being built which will have internal combustion engines; Russia has two gunboats fitted with the Diesel type.¹ The reports circulated by English newspapers that battleships equipped with internal combustion engines are already under construction have not been confirmed, but one of these papers, the *Standard*, states that "at least one motor cruiser may now be expected as a feature of the next Navy Estimates, and not impossibly a plunge will be made with a motor Dreadnought." The motor battleship is, therefore, within measurable distance.

2. REPLENISHING AMMUNITION.

Whilst the completing of ships with fuel places before the supply service tasks which can be calculated with a certain degree of accuracy, this is not the case as regards ammunition. The consumption of fuel is comparatively regular, even in war, but that of ammunition is not. Consequently opinions differ very widely as to how much ammunition must be held ready for conveyance to the fleet. The increase of weight and the lack of space on modern ships have made it impossible to carry relatively as much ammunition on board as in the past. On the other hand, the manufacture of ammunition now takes so much time that the necessary war supply cannot be produced just when required. A certain quantity must therefore be stored on shore, and arrangements made for its transport. How large this must be is a question that is not easily answered, and the fact that a modern gun loses its ballistic properties after a certain number of shots, does not give a solution. A stock

Diesel motors; she also has two 250-H.P. motors for auxiliary purposes. The capacity of the oil tanks is 1,000 tons. She cost 200,000 marks (£9,785) more than a steamship of equal tonnage would have cost.—The *Standard*.

¹ The "Kars" and "Ardagan." The engines were constructed at the Lud. Nobel Works in St. Petersburg and were designed to give the boats a speed of 14 knots. It is stated that they have proved extremely successful in the severe trials which they have carried out. According to Press reports, some coast defence vessels with internal combustion engines have been ordered in Holland.

that corresponded with this number would not suffice. The Japanese undoubtedly fought the battle of Tsushima with guns which were very considerably worn. Moreover, it will, for example, in taking full advantage of a victory, be of more consequence that the guns can still be fired than that their ballistic properties are not sufficient to meet all demands. That the ammunition ships, which the supply service must get ready, should be added to the number of non-fighting vessels with the fleet is, of course, undesirable. Here, again, we see the advantage of favourably distributed bases, which can also serve as ammunition replenishing stations. The transport of ammunition oversea is not rendered wholly unnecessary by them, but it is possible to limit it, to shorten the distances, and thus to render it more secure.

The question of replenishing with torpedoes has entered on a fresh stage, owing to the introduction of the new long-range model. Formerly the use of the torpedo was limited to a very small zone of the battle, and only the possibility of a small number of hits during the action could be reckoned on. To-day the possible number alone has increased as a result of the greater range of this weapon. At very great ranges accuracy is lost. In order to make hits, more torpedoes must be fired. The number of torpedoes required increases therefore not only absolutely, but also relatively. From these considerations it follows that torpedoes need replenishing more than formerly. After a single battle, probably all the torpedoes of a part of the fleet will have been fired, and will require to be replaced by the supply service.

3. PROVISION FOR THE PERSONNEL.

It is asserted that the modern man has become more fastidious, and has more wants than his forefathers, though it is open to doubt as to whether this would be the case in time of war; on the other hand, the means for satisfying his wants have multiplied to a much greater extent. In addition, providing for the personnel is rendered much easier owing to the fact that to-day considerably fewer men are carried on a given tonnage than in the sailing ship period.

Technical science has made it possible to preserve all kinds of fresh provisions for an unlimited time, and to make drinking water from the most unpalatable fluid that contains H_2O . As has already been pointed out, technical science here gives us back a large part of the freedom which it has taken away from us in other directions. It is only the question of space that prevents a fleet from being entirely independent as regards provisions for its personnel. The auxiliary means which it requires are, however, comparatively simple. As the outward voyage of the squadron under Rojdestvensky showed, one or two provision ships and one or two hospital ships are sufficient to meet the requirements of a whole fleet. It cannot, of course,

be maintained that the work of providing for the personnel in this case was carried out faultlessly.¹ Blame, however, appears to have been due in the first instance to the organization; moreover, it must not be forgotten that it was the first time the Russians had conducted an undertaking of this nature, and the long duration of the voyage was not foreseen.

It follows, therefore, that the work of providing for the personnel in war must be organized in time of peace, and that to do this successfully the progress of technical science, as regards the preservation of necessaries and luxuries, must be very carefully studied. Very important and interesting are the methods of transporting frozen meat. It may be pointed out that the British, in consequence of the large extent to which this article of food is used, always have available vessels suitable for the requirements of the fleets. This is undoubtedly a considerable advantage, as in this case, as in all others, methods improvised in time of need are troublesome and expensive, because breakdowns must be expected.² The excellent means now available for providing for the personnel as regards sanitation need not be discussed here.

B. The Repair Service.

1. REPAIRING FROM SHIPS' OWN RESOURCES.

The material of the modern ship's hull requires machinery for working it. Consequently there was a time when it was believed to be necessary to go to a dockyard for even the smallest repairs. This situation arose through the rapidity of the change from wood to iron ships, with which the ability of the personnel could not keep pace. It lasted until the seaman (in the broad modern meaning of the word) again obtained confidence in himself, and realized what technical work he could accomplish without outside aid. An obvious necessity for independent work was the installation on board of certain machinery and workshops for repair purposes, and it was equally obvious that the work had to be transferred from the boatswain to the mechanic, or the former had to be given technical training, and therefore made a mechanic. These conditions were not recognized for a long time, and the fact that the delightful independence of former days had entirely disappeared was regretfully acquiesced in.

Much more rapidly was it learnt, when the necessity arose, to carry out repairs to the engines and everything connected

¹ According to the statements of eyewitnesses the Russian torpedo boats were frequently in downright want. Even on board the large ships, small luxuries, which, on account of their influence on the general fitness of the men, it was undesirable to withdraw, very soon failed. Even such necessaries as boots and shoes were scarce at the end.

² The Russian steamers accompanying Rojdestvensky's fleet at times had to throw overboard several hundred tons of spoilt meat.—Politovsky, "From Libau to Tsushima."

with them. The modern reciprocating engine may have become very complicated, but there must be something seriously wrong if an experienced engineer cannot get at least some of the cylinders going again after a few hours' work. With the introduction of the turbine, a certain retrogression is again to be observed. The work that has to be done on the engines in ordinary circumstances is certainly reduced, but if any repairs to the turbine itself are necessary, they cannot be temporarily carried out from the ship's own resources. The introduction of the internal combustion engine may, perhaps, again do away with this disadvantage. The guns and torpedoes may be classed with the engines as regards the possibility of repairing them from the ship's own resources. A number of breakdowns can be successfully dealt with, and certain repairs undertaken. In all three main groups, however, hull, engines, and armament, the highest degree of perfection in this respect has apparently not yet been attained. Through the improvement of the technical appliances supplied to ships, and the better training of the personnel, the capacity of ships for self-help and self-maintenance will be able to be very considerably increased.¹ The more the possibility of repairs being carried out on board, or at least in the fleet, is increased, the greater is the freedom which naval strategists have for working out their plans.

2. REPAIR SHIPS.

The ideal would be to have all the necessary repairing facilities on board. Considerations of weight and space, however, soon put a limit on what can be done in this direction. There then remains the auxiliary means, the attaching to the fleet of certain special vessels—repair ships—for carrying out repairs. The strategic value of these vessels is very considerable. They cannot altogether take the place of naval bases, as there is a certain limit to their capabilities, but they are able to make a fleet much more independent and free.

Every fleet that takes the offensive must be capable of being away from its base for a long time, and must be independent as regards small breakdowns. In a great many cases it will be possible to establish a temporary base, or else to find some sort of anchorage for the repair ship. It does not always need these.

¹ The American Navy appears to be very advanced in this respect; at least, this may be concluded when it is heard that a few ships have already been supplied with crucibles which can deal with 45.4 kilograms (100 lbs.) of bronze and 27.2 kilograms (60 lbs.) of iron. By means of these crucibles, small castings, which do not need to have any great strain thrown on them, have been successfully produced. All very large ships have patent forges using oil fuel. The training of the personnel in repair work, Mr. Meyer, Secretary of the Navy, in his last report stated, was one of the principal tasks of the Service afloat. The greater independence of the fleet in this respect has already brought a noticeable reduction in the work of the dockyards.

The repair ships of foreign navies have even been able to carry out big jobs whilst under way. There are a number of repairs that cannot be carried out with the means available on board, and that reduce the fighting power of the ship, but for the sake of which it would be a great pity to return to a dockyard. The number of these will probably grow considerably in time of war. Whichever fleet can get these jobs done by repair ships will be able to maintain its position in the greatest strength; indeed, it may happen, that only in this way is it able to carry out an operation. Without the repair ship "Kamchatka," the following vessels of Admiral Rojdestvensky's fleet would probably never have reached the Far East: the battleship "Orel," the cruisers "Zhemchug," "Izumrud," and "Oleg," and the torpedo craft "Bystry," "Prouzitelny," "Buiny," "Gromki," "Bezupretshny," "Blestiashty," and "Groshniy." In the vessels named, large repairs were carried out with the assistance of the repair ship.

To a certain extent, perhaps, repair ships can be improvised in case of need, but such a policy is accompanied by very considerable disadvantages. In the first place, the vessels are not immediately available, as their fitting-up must take a considerable time. In modern warfare, however, speed is everything, and especially in offensive operations. Secondly, an improvised repair ship would never be of such practical value as one specially built for the purpose. Experience always has to be gained. If this is first done in war, it is correspondingly expensive. Thirdly, it makes a difference to even the best workman whether he works afloat or on shore. On board an improvised repair ship the personnel have first to get used to working under new conditions, thus using up powers which are urgently necessary for productive work.

Unfortunately, little is known regarding the experience of the English with their two repair ships "Cyclops" and "Assistance." The Americans have, however, published some information regarding the testing of their repair vessels and ship's workshops. Chief Engineer Hutch J. Cone, Chief of the Bureau of Steam Engineering, reported exceptionally favourably regarding the work done. In a report to the Naval Committee on December 14th, 1910, he stated that, according to his experience, the repairs to the machinery installations carried out on board the ships were not of a provisional character, but were in most cases as good as if they had been done on shore. Although they might not be in a position to make a new cylinder, they were able to re-bore one. This had actually been done on board a battleship between Colombo and Suez, whilst the vessel was steaming at ten knots, and without her falling out of her position in the fleet. It was the high-pressure cylinder of one of the main engines. This was bored out with the means available on board, whilst the repair ship carried out certain smith's work in order to make the piston larger. He

stated that the "Panther," the repair ship, had been of great assistance to the Bureau of Steam Engineering. The Chief Engineer gave it as his opinion that it is almost impossible to improvise a repair ship in case of necessity, and also made some remarks regarding the work of such a vessel after an action. She could make good practically all injuries to a ship's hull and engines, except severe injuries to cylinders, to very large castings, and to boilers. Of course, there is much overhauling of a general nature which she cannot do, but he hoped that in the future the work of the dockyards, as regards the machinery installations, would be limited to renewing boilers, repair of boiler casings, large repairs to the main engines, etc. (*Army and Navy Journal*, December 31st, 1910).

As the Americans have both peace and war experience with repair ships, the good opinion which they have of them is as important and interesting as the high demands which they make as regards repair ships. These are :

1. Those concerning the number required.
2. Those to be made on each vessel.

As regards 1, Chief Engineer Hutch J. Cone states, that one repair ship is necessary for every sixteen battleships, one for each submarine flotilla, and one for each destroyer. As regards 2, from a design for a vessel of 13,500 tons and 14 knots speed, published in *International Marine Engineering*, a repair ship is required to be able :

- (a) To make moulds and castings up to four tons weight, that is, all castings for small vessels, and for battleships all engine parts except cylinders of the main engines and turbine casings.
- (b) To carry out all smith's work for ships, except shafts of main engines.
- (c) To roll and bend any plate for a ship's hull and for boiler casings.
- (d) To fit copper tubes, to repair and tin damaged tubes.
- (e) To perform all kinds of machinery repair work.
- (f) To carry all the materials necessary for these jobs.

The foundry and smithy were to be so well equipped that she could supply material for her own workshop as well as for the workshops on board the ships. In case of necessity, the services of all the workshops in the fleet could be simultaneously requisitioned. The plans showed that special attention had been paid to ensure good lighting of the work spaces of the repair ship, and that all the equipment was convenient and could be rapidly handled. It will thus be seen that the American Navy places heavy demands on its repair ships, and that their experience shows that it is quite possible to render a fleet very independent if it has the assistance of these vessels.

3. REPAIR POSITIONS ON SHORE (BASES).

It has already been pointed out that there is a limit to the capabilities of repair ships. Outside this come very severe injuries below water which cannot be repaired by divers, but necessitate the ship being docked, and also heavy and extensive damages to the hull, engines and armament, or to complicated apparatus, which cannot be put right with the tools and material carried. Such work has to be done at bases on shore which are equipped as repairing stations. With regard to the demands which may be made on bases, speaking very generally, it may be said that they must possess docks, workshops, and other installations that may be wanted for carrying out all repairs required by damaged ships, and that either the material and reserve parts necessary in the case of severe injuries to hull, engines or armament, must be stored at the place, or at least, the favourable position of the place relatively to other sources of supply must ensure their rapid production. It is impossible to go into details on account of the many points that would have to be dealt with. To sum up, it may be said, with regard to the three main divisions of the repair service, the ship's workshop, the repair ship and the base, that as regards their capabilities they vary, but as regards their military necessity they are equal, as each is indispensable. This is fully borne out by practical experience. The proper equipment of the fleet and of strategically important points for repair work means that a valuable auxiliary from the point of view of naval strategy has been made available.

III. THE BASES OF THE PRINCIPAL NAVAL POWERS.

The importance of the base has already been clearly pointed out in the preceding sections. Its influence on naval strategy must, however, be specially considered here. We may regard as a base a place which meets any, or all, of the demands of the Intelligence and Order-transmitting Service and the Supply and Repair Services. The degree to which a military position satisfies these requirements decides whether it is to be classed as a principal or a subsidiary base. A principal base must satisfy the requirements of the Intelligence and Order-transmitting Service and those of the Supply and Repair Services to such an extent that it can serve as a permanent base of the whole fleet for war operations. It is obviously necessary that it should be fortified, as it must be in a position to remain independent of the protection of the fleet. The farther it is from the home country, the stronger must it be. A subsidiary base only needs to satisfy one, or a few, of the above-mentioned demands. It is of service for the supply of material and intelligence to a fleet proceeding to the area of operations, and also for the maintenance of the lines of communication.

It may also be of importance in connection with minor operations, for example, as a base and place of equipment for cruiser warfare. A series of subsidiary bases, or one of subsidiary and principal bases, forms the "line of operations" of the fleet.

Principal bases are necessary in the main area of operations. Home waters are the first to be considered, as the mother country is frequently the object of the enemy's operations. In many cases the attempt will be made, if it is at all possible, to utilize the great strategic advantage of short lines of communication and await the enemy in home waters. If the interests of a country extend beyond the adjoining waters, then the probability of operations being conducted in distant seas, and the desirability of fortified positions there, will depend on the importance of these interests and how far they border on or intersect foreign spheres of interest. It would be quite wrong to over estimate the value of bases and to spend money to develop them to an extent not necessary to the fleet; expenditure must be correctly distributed. Moreover, history shows that in case of necessity it has been possible to manage with very little, and even temporarily to transform subsidiary bases into principal bases. This is, however, a very inadequate makeshift, which will always mean a great loss of time, and is now scarcely practicable. A large navy, which has duties to perform in all seas, must have bases. The number and size of these will be decided by the general strategic interests of the country, these being determined either by the existing position as regards oversea trade and colonies, or by economic and political aims for the future (at least, approximately, as soon as the political programme has taken a definite form), and also by the geographical conditions. The two main objects will be the provision of (1) bases of operations (principal bases), and (2) strategic lines of communication and operations, in the form of chains of bases.

The nearer bases of operations are to probable areas of operations and to the bases of possible opponents, the more valuable they are. A Power which adopts an offensive policy, or has large interests to protect, will, therefore, in danger zones, endeavour to establish a base near every new naval port constructed by a foreign country, and, conversely to prevent other navies from obtaining a footing. Thus, the occupation of Solum by Great Britain followed the report that Tobruk on the coast of Tripoli had been selected as the Italian naval station; whilst on France is imposed the condition that she will not construct a naval port on the Mediterranean coast of Morocco, opposite the British base at Gibraltar. The probability of a conflict with any particular country can only in the rarest cases be predicted with any certainty. Strategists will therefore have to determine in peace which seas, routes, ports, etc., are of such importance for their own policy that they may be the

objects of attack. The task before them then is to strengthen the protection that the fleet provides for these objects by establishing principal bases. It must not be thought, however, that a base, in any area which lies out of range of the fleet's guns, can "command," in the strict meaning of the word, by means of its own power. The much-used word "command" has been purposely avoided here, and where it is used in the course of this discussion on account of its brevity, it is always to be understood that the principal base only gives the naval forces a better chance of bringing the adjoining waters under its control.

The better the oversea communications of the principal bases with their country's centre of power and the central naval authorities, that is, with the mother country, the greater is their utility; consequently, efforts are made to connect them by chains of subsidiary bases. The terminal of a strategic line, so designated on account of possession or political aims, is not always that which is most endangered and in need of protection. A danger point exists where the lines of a foreign nation's interests or power meet or threaten to cut through those of our country. In such a case we have round the strategic line a probable area of operations with all its effects on the policy to be followed as regards bases. Peace strategy must also take this into consideration in the distribution of naval forces. In estimating the value of bases and strategic lines, it must always be borne in mind that they have no independent object. They are there for the naval forces, and not *vice-versa*. The points of view explained here are easily distinguished in the policies of the principal naval Powers as regards bases.

Germany, who has constructed her fleet mainly for the protection of her trade and therefore with, from the political standpoint, defensive aims, at present limits herself strategically to securing her position in the inner waters of the North and Baltic Seas, and keeping open the English Channel and Skagerrak, which lead from them into open waters. Her principal bases are Kiel and Wilhelmshaven. She has only one base abroad, namely, at Tsingtau for the ships maintained in East Asiatic waters. The equipment of this port does not yet correspond with what we have here pointed out to be necessary for a principal base. Apparently no steps have been taken to develop other colonial ports into bases.

Great Britain, in addition to her strong position in the Channel and in the Southern portion of the North Sea, with the principal bases, Sheerness, Portsmouth, Portland and Devonport, is now constructing a strong naval base in the North, at Rosyth, in order to command the Northern outlet to the Atlantic Ocean, and complete the much-talked about sealing of the North Sea. She has also a strategic main line of communication running through the Mediterranean and the

Red Sea to India, East Asia, and Australasia. It passes through the principal bases Gibraltar, Malta, Bombay, and Singapore, to Hong Kong, with the subsidiary bases (coaling stations) at Aden and Perim in the Red Sea, Colombo and Calcutta (the latter also being equipped for effecting small repairs) in Indian waters as intermediate stations. The line round the Cape of Good Hope, which passes through the subsidiary bases (coaling stations) Freetown or Ascension, Lagos, Cape Town, the principal base Simonstown, and the subsidiary bases Mauritius and Seychelles, connects up in Indian waters with the main line running through the Mediterranean. These places, with the exception of Perim, Lagos, and the Seychelles, are fortified. At Gibraltar and the Suez Canal, Great Britain watches the entrances to the Mediterranean. The possession of the Cape and the entrance to the Red Sea, the lines of bases running to India and along the Indian coasts, Singapore, which commands the Malacca Straits, and the bases in Australia, make the Indian Ocean practically a British Sea. Great Britain makes every effort to prevent new neighbours from appearing on this route and in these waters; it is only necessary to refer to the way in which she has dealt with the questions of the Dardanelles and the Persian Gulf. So long as France still made claims to an independent position and threatened the supremacy of Great Britain in the Mediterranean, the centre of British naval power lay in this sea, and the ramparts of Gibraltar and Malta confronted on the East and West, as they still do to-day, the portion of the Western Mediterranean claimed by France, flanking the French line Toulon-Bizerta. During last year the British Government secured Solum, East of the new Italian strategic line Tarent-Tobruk.¹ which is already commanded from the West by Malta. The freedom of France in the Mediterranean, which Great Britain, in accordance with the political situation, concedes to her, is only apparent, as the British position there, thanks to the strength and number of her fortified bases, is still unshakable, and can at any time make itself felt by another re-distribution of her naval forces. The advance post at Wei-hai-wei, pushed forward into Chinese waters, corresponds with the previously-mentioned demand of offensive strategy for bases close to the gates of possible enemies. It lies close to Ryojun and Kiautschou on the peninsula enclosing the Gulf of Tschili. In Australian waters there are available for a British fleet the principal bases Sydney and Melbourne, as well as several intermediate bases and coaling stations. Great Britain has drawn back from America from a military as well as from a political point of view. The base at Bermuda, situated off the East coast of the United States, in a central position relatively to the American naval ports, has not been developed in recent

¹ Perhaps also Bomba.

years, and does not satisfy modern requirements for a principal base. The fortified port of Kingston in Jamaica is only a coaling station, and Bridgetown in the Barbados is of no importance. The equipment of the Canadian naval ports, Halifax and Esquimalt, has not progressed with the times. A strengthening of the British position in front of the Panama Canal, which is occasionally demanded in the Press, is out of the question for political reasons. The principal bases and most of the intermediate bases of the British network of fortified positions, are incorporated in the all-British intelligence system, as will be seen from Section I of this article.

The United States, as has recently again been pointed out, namely, in the prize essay of Lieutenant Ridgely Hunt, U.S.N.,¹ first made the mistake of constructing too many bases in proportion to the size of their fleet. In the home country alone there were eight first-class and three second-class bases. The number has been reduced in the last 12 months, and is to be reduced still further. With the new system there will be regarded as principal bases: a position on the East coast North of Delaware and Norfolk, with an advanced post (also a principal base) at Guantanamo. As a connecting link between the East and West coasts is added a central position, embracing the whole Panama Canal zone, which is to be made very strong by fortifications and extensive installations of the supply, repair, and intelligence services.² The principal bases on the West coast will be at the Western end of the Panama Canal, San Francisco and Bremerton. From the West coast, America, from the strategic offensive standpoint, stretches out an arm towards East Asia. Pearl Harbour (Honolulu) and Cavite (Manila) are here the principal stations, which will be able to serve as bases of operations for the fleet.

These few principal bases form the framework of the new strategic system, which, in contrast to the previous over-estimate of the Atlantic as compared with the Pacific coast, regards the two oceans as of equal importance. As the distances between the principal bases are in some cases very great, they need to be and are supplemented by chains of subsidiary stations: on the East coast, Boston, in the North, and Charleston (base for torpedo craft and submarines), and Key West in the South; on the West coast, between Panama and San Francisco, San Diego, and on the San Francisco-Bremerton line, Portland. If the United States should be compelled to extend their operations on the West coast very far to the North, they would be able to make use of the coaling stations Sitka and Kiska (Alaska).

¹ *Proceedings of the United States Naval Institute*, March, 1912.

² The principal installations will be at the west end of the Canal, that is on the Pacific coast.

The efforts which the United States are making to render the Caribbean Sea strategically secure, are easily understood when it is realized what great expectations are still held with regard to its future. Admiral Mahan, for example, has written :—

“ When the Canal is constructed, the Caribbean Sea will be transformed from a terminus and a sea with only local traffic into one of the main routes of the world’s trade. A large stream of commerce bearing the goods of other powerful nations, namely, the European States, will here pass closer to our coasts than ever before. In these circumstances it will not be so easy as it has been in the past to keep aloof from international entanglements. The position of the United States on this route resembles that of Great Britain relatively to the (English) Channel, and that of the Mediterranean Powers to the routes leading to the Suez Canal.”

The connecting links across the Pacific Ocean possessed by the United States have already been mentioned. The most important is Pearl Harbour in Oahu (Hawaii). This island, lying in the open ocean, cannot give a fleet the same commanding position in regard to the surrounding area as a fortified base in narrow waters. As the only base on the exceptionally long route to East Asia, it is, however, of very great value. The Western end of the chain is Cavite, which forms a base for operations in Chinese and Japanese waters. Between Pearl Harbour and Cavite lie the subsidiary bases Midway Island (important for the Intelligence Service, owing to its being a cable station), and Guam, which has been named the Gibraltar of the Pacific Ocean, although undoubtedly this is not quite justified. Its position is more that of an island in the open ocean than a stronghold guarding a narrow sea. The communications of this system by means of cables and wireless telegraphy have already been dealt with under the heading, “The Telegraphic Lines of Communication of the Principal Naval Powers.” At present the areas of operations in the Atlantic and Pacific Oceans are separated by a route of about 13,400 nautical miles, round the South point of South America, where the United States have no base and practically no means of communication. The Panama Canal will not only bring these two areas close together, and thus effect a very great saving of time for a fleet proceeding from one to the other, and enable it to rely wholly on its own bases, but will also bring the whole route within the scope of the United States Intelligence Service. These will be invaluable improvements of the whole strategic position.

France has a principal base on each of her three main fronts: on the Channel, Cherbourg; on the Atlantic Ocean, Brest; and on the Mediterranean coast, Toulon. The centre of

the strategic position of France undoubtedly lies in the Mediterranean. The terminus of the route to her North African possessions, from which, in case of war, she hopes to be able to draw the necessary reinforcements for her Army in the mother country, is Toulon, and on the African coast Bizerta. Bizerta could also be utilized as a base for taking the offensive against Italy. A perhaps unnecessarily large number of subsidiary bases completes the strategic system. Communication between France's two areas of operations, that of the Atlantic and that of the Mediterranean, is interrupted by the narrow Straits of Gibraltar, which are easily watched by Great Britain. The latter country has secured for herself here a monopoly position against France. The position of France in the Mediterranean is brought out in the discussion of that of Great Britain on a previous page. A fleet proceeding to the French Asiatic possessions only finds en route a coaling station in the Red Sea, Djibouti, a second-class base at Saigon, and a coaling station at Haiphon. The African position is strengthened by the principal bases Dakar (Senegal) and Diego Suarez (Madagascar). To these must be added the coaling station at Libreville (French Congo) and Réunion (East of Madagascar). In West Indian waters Martinique serves as a second-class base. Cayenne (in Guiana) and Noumea (New Caledonia) are of no special importance. With the exception of Dakar and Diego Suarez, none of the foreign stations are equipped with modern installations.

The political plans of Japan tend towards the Continent. The newly-acquired possession of Korea forms the point of entrance. The strategic lines run across the Korean Straits parallel with the direction of political expansion. The centre is the short line from Sasebo (in Kiushiu) to Chinkaiwan (on the South-East coast of Korea), in which is included the torpedo craft base at Takeshiki in the Island of Tsushima. Sasebo is already a principal base and Chihkaiwan will be in a few years. This line forms the main artery from Japan to the mainland. Its undisputed possession is necessary to ensure her hold on Korea. From this centre-line, branches extend northward along the Japanese main islands and South Sakhalin, and Southward to the Riukiu Islands and Formosa, enclosing the Sea of Japan and the East China Sea. The bases and coaling stations are distributed so that a fleet or even a small naval force will be able to close the entrances to these seas; thus there is Makung in the Pescadores Islands, Kelung in Formosa, Nagasaki for the waters South of Kiushiu, Kure and Moshi for the Bungo and Linshoten Straits, Hakodate and Ominato for the Tsugaru Straits, and Otaru for La Perouse Straits. Yokohama and Yokosuka protect the capital on the East coast of Hondo. Ryojun (Port Arthur) is only of importance for Japan, in that it would be dangerous for it to be in the hands of any other Power. It is reported that it is intended to establish an advanced base in the Bonin Islands, in order to extend the

scope of the Intelligence Service as far as possible by means of powerful wireless telegraph stations. Elsewhere the Japanese have no base. It has been rumoured that efforts made to acquire the Galapagos Islands, or a piece of land on the West coast of Mexico, for military purposes failed owing to the opposition of the United States. The principal islands and bases are in communication with one another by cable and wireless telegraphy.

By the proclaimed annexation of Tripoli, Italy has moved the strategic centre of her position in the Mediterranean to the Naples-Taranto-Tobruk (Bomba) line. Great Britain's counter-move to this new political strategic situation has already been mentioned. Italy's East African possessions have no base of any importance, and she has none on the route to them. For the purposes of the Intelligence Service the distances are covered by wireless telegraphy.

The very unfavourable position of Russia has already been pointed out. Her position resembles that of the United States at the present moment, but it is much worse on account of the greater distances.

Want of space prevents us from dealing with the remaining countries, and also from going into details. The same reason necessarily makes this article little more than a summary. The importance of the technical auxiliaries of naval strategy will be apparent, however, from this general review. These auxiliaries must render it possible for strategists to work on those broad lines, without which a resolute offensive is inconceivable. The difficulties which arise in time of war are reduced in proportion to the amount of work and money expended on technical preparations in time of peace, assuming, of course, that they are correctly applied. We must not overestimate the importance of these technical auxiliaries. When there is a lack of any particular thing, or the enemy is better supplied with it than we are, there must be no exaggerated pessimism. The penalties for any really unjustifiable neglect will, however, have to be paid.



KUROPATKIN IN 1904.

By CAPTAIN H. M. JOHNSTONE, late Royal Engineers.

IN February, 1904, General Kuropatkin was Russian Minister of War, and was then designated to the command of the "Army of Manchuria." He did not arrive in the theatre till after the beginning of April, and General Linievitch acted as commander in the interim. Between the Ministry in St. Petersburg and the military commander in Manchuria stood Admiral Alexeiev, Viceroy of the Far East, a sort of third wheel in what would have been an efficient enough bicycle. This man was a direct nominee of the Czar, and proved to be very much in the way. His views as to the Russian strategical concentration and deployment differed in many important respects from those of Kuropatkin, who, in the end, must bear full responsibility for the operations of the Army of Manchuria.

Within a fortnight of Kuropatkin's arrival in Manchuria, the Czar himself was becoming uneasy as to the result of having an Alexeiev and a Kuropatkin alongside of each other in Manchuria. On April 20th we find his Majesty telegraphing¹ to Kuropatkin :

"In appointing you to the important post of commander of the Army, I am concerned in the matter of establishing correct relations between you and the Viceroy; though such relations are fixed by regulations, they demand none the less the exercise of tact and of *savoir-faire*. It is agreeable to me to note that, up to the present, there has been no production in the high command of any misunderstanding of the kind that has too often appeared, unfortunately, in former wars, to the detriment of the conduct of operations, and to the prejudice of Russia. In expressing to you my satisfaction, I am persuaded that you will be able also in the future to expel all discordant matter (*écartez tout sujet de désaccord*), and continue to be a valuable collaborator to my Imperial Lieutenant and Generalissimo in the difficult situation in which he is placed."

Two months earlier the Czar had written to inform Alexeiev of the appointment of Kuropatkin, and of Makharov to command the fleet, and had added :—

"I am convinced that the nomination of these independent and responsible chiefs will facilitate for you the so important rôle of representative of my authority. . . ."

¹ All quotations of telegrams and dispatches in this paper are taken from "*Guerre Russo-Japonaise 1904-1905 Historique Rédigée à l'Etat-Major-Général de l'Armée Russe.*" Tome II.

This letter cannot be reconciled with the telegram. Kuropatkin is first to be "independent and responsible;" then he is to do the best he can with broad plans concocted by the Viceroy—a most unbusinesslike method of procedure; for the General who is to conduct the operations of the army should be coerced in no particular. What did Napoleon do in 1800, when he was First Consul of France? He propounded to the Council a plan of operations for Moreau's army, which was to attack the Austrians across the Rhine. It was agreed to, as it well deserved to be, but Moreau did not like it, thinking it was too bold. Napoleon allowed Moreau to go on with his own plan, saying that no general, responsible for a distinct operation, should be ordered to adopt a plan the value of which he did not understand.

We shall see presently in what lay the fundamental difference between the two authorities in Manchuria, and we shall, I think, conclude that the General was in the right and the Admiral in the wrong.

On February 24th, Kuropatkin to Viceroy :

"I take the liberty of expressing the opinion that the most important measures to be now taken in the theatre of operations are :
(1) To increase the capacity of resistance of Port Arthur, for I think we may expect to see it besieged and assaulted by four or five divisions.
(2) To take energetic measures to prevent the enforced dissemination of our troops between the Liaoho and the Yalu resulting in our being beaten in detail."

Two days later he wrote that the weakness of the Russian forces at the beginning of the campaign would enable the Japanese to cut off "the Kwangtung" (the Port Arthur peninsula), from the Army of Manchuria, and that he therefore held it necessary :

"to be prepared for this rupture, and for that to strengthen our situation in the Kwangtung by sending there at least two more regiments. The Kwangtung is a very important objective for the enemy, for the taking of Port Arthur by a rapid attack, the destruction of our fleet, and the conquest of Korea will constitute for him an immense success, even before he has made any move against our Army. . . . If Port Arthur under siege has not a sufficient garrison, the commander of the army, fearing for the fortress, will perhaps be obliged to pass to the offensive before having assembled all his force."

This last sentence exposes, by implication, Kuropatkin's judgment of the task he had before him. He wishes Port Arthur to be fit to look after itself for a good long time, so that the field army may not have to undertake any important work till it can do so with an assured superiority of force. He would like Port Arthur, with 30,000 troops, to contain 60,000 or 70,000 enemy, while he, at Liaoyang or further north, collected his promised forces till they substantially outnumbered the Japanese field armies.

We find this plan absolutely sound. We can imagine Kuropatkin saying:—"Because the Japanese will be very anxious to gain Port Arthur, let us compel them to use a lot of troops for the purpose by making our garrison of the Kwangtung strong enough to occupy the attention of twice the number of enemy for some months. We shall then be able to avoid all premature expeditions for the 'relief' of the place, and shall be able to turn our whole attention to the concentration of our promised forces."

Eventually, as we know, Kuropatkin succeeded in this sufficient garrisoning, which enabled the fortress to hold out till the end of the year, but he did not succeed in making St. Petersburg and Alexeiev believe that it could so hold out. This failure in faith brought him orders which drove him to those premature advances which cost him so many men, and compelled him to stand decisively at Liaoyang, so as not to separate himself too far from Port Arthur. For it should be understood that his own plan was not to accept attack as soon as he found himself strong enough to make a *defence* against the total Japanese field army, but to engage in no sort of battle until he could *attack* with a substantial preponderance of numbers. In pursuance of this, had he been his own master, he would probably have retired as far as Tieling without fighting. For in a despatch of this time he writes:

"I conclude by repeating that the capital point is to defend Port Arthur and not to let ourselves be beaten in detail in South Manchuria; if the enemy presses us with superior forces, we must fall back even beyond Mukden, without compromising the troops that will feel the first blows. Our turn, too, will come to push forward and impose our will upon the enemy."

It is satisfactory to find, from a letter of March 1st, that Linievitch agreed with Kuropatkin, and also echoed his views with regard to the *rôle* of the Yalu detachment:—

"This detachment should have a purely demonstrative *rôle*. . . . There is no need to fight on the Yalu, for we have not enough men to stop the enemy there. . . . and should not expose ourselves uselessly to blows."

Alexeiev replied to Kuropatkin on February 29th:

"It is indeed for us an interest of the first order to preserve Port Arthur; but there is, in my opinion, a serious danger in reinforcing its garrison to the detriment of the field troops concentrated in South Manchuria."

The difference of view of the two leaders is very marked. Kuropatkin would make Port Arthur very strong, because it is bound to be attacked, and cannot postpone or escape the blow by movement; then he would be able to leave it to itself, and plan his field operations without distraction. Alexeiev would keep his field army a little stronger from the beginning, and

would hold it near the *Kwangtung* in order to go to the help of the fortress whenever it should be attacked. But surely, if a fortress is worth anything, it should be able to hold out *for some time*, and for a more or less calculable time.

Alexeiev, in same despatch :—

“ Moreover, up to this day, there is no definite certainty that Port Arthur will be just at once (*dès maintenant*) the objective of the enemy’s operations. . . . An isolated operation against Port Arthur only promises serious advantages to the enemy if he can master the place with a rush. . . . But the time is past when he could do that. . . . From a purely military point of view it may seem risky to stay as long as possible in South Manchuria; but from the political point of view. . . . This plan (the Viceroy’s original plan, which he would still adhere to) supposed, it is true, that our fleet was mistress of the gulfs of Liaotung and of Korea. . . . But in my opinion this condition is not so essential as to make the lack of it the cause of changing the plan of concentration of the army. . . . Even if our squadron were reduced to complete impotence, and a hostile landing on the shores of the Liaotung¹ took place, it would present no great danger for us unless it was executed in the region of Yingkeou. . . .”

This is the man who was to be an irremovable Old Man of the Sea on the shoulders of the unfortunate Kuropatkin, throughout a very arduous campaign.

On March 2nd, Kuropatkin, still in St. Petersburg, proposed to the Viceroy to cease sending more troops to the Yalu and to arrange as follows :—

Eight battalions and plenty of cavalry to the Yalu. (These were there already).

Eight battalions as advanced guard to Kinchou (isthmus leading to Port Arthur). (This in addition to the full garrison of the *Kwangtung*).

Eight battalions to watch the coast about Yingkeou.

All the rest from Haicheng to Liaoyang.

If, then, the enemy landed on the west coast of the Liaotung, the Army could retire in safety to Liaotung, Mukden, and Tieling, positions being prepared at these places.

While these exchanges of views were proceeding between the Viceroy, Kuropatkin and Linievitch (temporary Commander-in-Chief), the Emperor addressed the Viceroy in terms that show that Kuropatkin, still in St. Petersburg, had his ear :—

“ Our principal object in the first period of the war is to preserve the railway, our sole means of transport, and particularly the city

¹ The Liaotung comprises roughly all the land cut off by a line from Yingkeou to Takeshan. It is commonly called a peninsula, and ends in S.W. in the peninsula of *Kwangtung*, in which is Port Arthur.

of Kharbin. . . . When the Japanese begin to move forward, the best means . . . will be to keep them as far as possible from the railway.

The context shows that "the railway" does not mean that between the army and Port Arthur, but that between the army and Siberia.

"The second question, in order of importance, is to allot sufficient forces to Port Arthur. . . . The fate of our fleet. . . is bound up with the maintenance of that fortress."

"In the Maritime Province it is necessary to have the forces requisite for the defence of Vladivostock."

That is, let us first so garrison Vladivostok and the Kwangtung that the field army will not have to go at once to their assistance; then the army can reinforce itself without distractions, until it is strong enough for work.

"When sufficient forces shall have been assembled in the theatre, we shall pass resolutely to the offensive. . . ."

This is Kuropatkin's wise strategic plan.

On receipt of this despatch, Alexeiev held a conference at Mukden with Linievitch and two other Generals, and the following resolutions were adopted:—

- (1) To establish a project of fortification of Kharbin for a garrison of 30 battalions.
- (2) To reinforce the railway guard.
- (3) To keep at Fenghuangcheng and on the Yalu a brigade as advanced guard, and use a considerable cavalry force in Korea.
- (4) To keep a solid establishment in the region Yingkeou—Haitcheng, in case a Japanese landing in force there should cut off the troops on the Yalu.

(A very unlikely event, for such a force would be out of reach of support from the Japanese armies landing on the south coast, and could be quickly surrounded by the "Army of Manchuria.")

- (5) That 20 battalions of infantry and three of artillery is a sufficient force for the Kwangtung.

Linievitch, who saw eye to eye with Kuropatkin, protested against this, as being in direct contradiction to the Czar's instructions.

- (6) To take Port Arthur out of the command of Kuropatkin and put the place under the commander of the fleet.

Linievitch again protested vigorously, and he wrote two days later to Kuropatkin, strongly urging the substantial reinforcement of the Kwangtung, and the fortification of the isthmus leading to it.

It is evident that the authorities of this unfortunate Russian Army are very much at cross-purposes, and as one of them, Alexeiev, is the nominal superior of all, it is no wonder that Kuropatkin should fail to do himself justice.

Kuropatkin, having received this of March 5th from Linievitch, proposes to the Viceroy to send certain specified battalions, just arriving in Manchuria, to the Kwangtung, to increase the artillery and engineers there, and to form a force of 15 battalions, four batteries, and a company of sappers (separate from the fortress garrison) to defend the isthmus (the Kinchou or Nanshan position). By dint of urgent insistence on the part of Kuropatkin and Linievitch, Alexeiev at last consented to increase the 13½ battalions he had intended for the Kwangtung to 26½ battalions; but even then he had only carried out a part of what his generals wanted.

This kind of interference continued for many months more, "to the detriment of the conduct of operations, and to the prejudice of Russia," as the official correspondence shows. Enough has been said above to show to what an extent a good general was hampered, prevented from operating in the manner which he understood and reckoned best, and hindered, therefore, from showing the best that was in him.



MOLTKE'S STAFF RIDES.

By CAPTAIN SCHAEFER, Austro-Hungarian Army.

[Translated from *Streffleur's Militarische Zeitschrift*, and published by permission.]

MOLTKE considered that the most important of his duties as Chief of the General Staff of the Army was to prepare for all eventualities of war within the bounds of possibility, and that this preparation must, so far as practicable, be of a concrete and not merely of an abstract nature.

The very welcome publication of Moltke's schemes of operation against France, Denmark, and Austria shows how often he reconsidered and recalculated his projects, and how diligently he kept them adapted to the political and military conditions of the moment.

Second only to these concrete preparations for war, the training of the General Staff was the subject to which Moltke devoted the greatest care. The publication by the Prussian General Staff of the above-mentioned documents gives us a most instructive insight into this branch of his work, including the whole of the tactical schemes set by him, and the staff tours which he directed up to 1869.

In the following pages I will endeavour to show which were the matters to which Moltke attached such importance that he repeatedly made them the subject of General Staff tours, and the relation which the schemes of these tours bear to his other labours, especially to his concrete preparations for war.

The detailed discussion of the conduct of these tours is beyond the limits of the present essay.

The following Table gives the principal data regarding the staff tours directed by Moltke, so far as these can be gathered from the official publication of the Prussian General Staff :—

TABLE OF MOLTKE'S STAFF RIDES.

Year.	Area of Operations.	Assumed Enemy.	Date and Duration of Staff Ride.
1858	Silesia	Russia ...	Sept.—October, 16 days.
1859	Rhine Province	France ...	October, 13 days.
1860	Elbe Valley, Dresden to Witzenberg	Austria ...	October, 13 days.
1861	Rhine Province	France ...	Sept.—October, 15 days.
1862	Frankfort on the Oder to Berlin	Russia ...	October, 15 days.
1863	In these years no General Staff tours took place, owing to the war with Denmark.		
1864	Thuringia	Little Germany	October, 7 days.
1865	No Staff tour, owing to war with Austria.	Austria	
1867	Silesia	Austria	July, 25 days.
1868	Thuringia	South Germany	August, 17 days.
1869	Gorlitz to Dresden	Austria	August, 16 days.

It appears desirable, in the interests of clearness, to consider these staff tours with reference to the military situations on which they were based, rather than in chronological order.

Before entering on a discussion of the individual tours, it will be well, in order at once to direct attention to the most important matter, to point out those features which are characteristic of Moltke's published staff tours:—

(1) There is a constant and intimate connection between the exercises carried out during the tours, and the concrete preparations for war and schemes of operations.

(2) In two tours, those of 1867 and 1868, the exercises are based on historical questions, partly in combination with Moltke's actual plans of operations.

(3) In almost all of his staff tours, Moltke practised the concentration of widely-dispersed Armies. The best means of effecting a junction between them in face of a stronger enemy, already concentrated, was one of the objects of the exercise.

(4) In most of the tours, operations on the flank of the enemy played an important part.

The connection between the General Staff tours and the actual projects of operations, and the handling of historical questions in these tours, are subjects which will be dealt with in considering the individual tours.

The operations of widely-separated Armies will be considered more particularly at the end of this essay.

Offensive operations from flanking positions are Moltke's favourite method—if, indeed, it be permissible to use such a term of him—and therefore deserve most careful consideration.

It is true that no opportunity which Moltke judged suitable for the employment of flanking operations occurred in any of the wars waged by Prussia from 1864 to 1871 inclusive. But

even after the campaign of 1871 he continued to lay stress on the advantages of flanking operations; as, for instance, in a certain great tactical exercise.

Flanking positions and flanking operations will only be touched upon so far as necessitated by continuity in the treatment of the subject. To discuss them in detail would be to overstep the limits of this essay.

A. GENERAL STAFF TOURS BASED ON WAR BETWEEN PRUSSIA AND RUSSIA.

In the tours of 1858 and 1862, Moltke assumed a state of war between Prussia and Russia. The assumed data, and the course of the exercises, cannot be compared with the actual project of operations against Russia, because this has not been published. The reasons which may have induced the Prussian General Staff to keep secret the whole of Moltke's plans of operations against Russia have already been set forth in a former essay. ("Moltke's Work as Chief of the General Staff in Peace Time," *Streffleur*, February, 1912).

The first staff tour directed by Moltke as Chief of the General Staff took place in the year 1858. The assumed situation is shown in sketch 1 (a) of Appendix 13.*

The object of the exercise was to manoeuvre the four dispersed Prussian divisions detailed for the defence of Silesia, namely, the 12th, 11th, 9th, and 8th, so that they should not be exposed to defeat in detail. Therefore they were not to assume the offensive till concentrated. The history of the tour shows that Moltke proposed to concentrate the four Prussian divisions at Görlitz, more than 120 miles from the frontier.

This most instructive feature of Moltke's operations, the endeavour not to strike till all available forces have been brought up, is noticeable in almost all his General Staff tours and also in his projects for operations.

In this connection we may consider the second tour in which a state of war with Russia was assumed. This took place in 1862, two years after Moltke had framed a plan of operations against Russia. (See remarks on the "Memo. of the Spring of 1860" in the official documents of the war of 1870-71). The substance of this plan has not been divulged, and cannot therefore be compared with the general idea of the tour of 1862.

The year 1862 was a most critical one for Prussia, as regards the political and therefore also the military situation. In this year Moltke framed plans of operations against France, Austria, and South Germany, and probably also against Russia.

The general and special ideas for the 1862 tour may be condensed as follows (see sketch 1 (b).*

* Not reproduced.

General Idea.

On the Prussian side, the VIth and IIIrd Army Corps are at Breslau, the 1st Army Corps at Königsberg, the IVth Army Corps, with the VIIth and VIIIth Army Corps, are on the Rhine.

The enemy's Eastern Army has detached adequate forces against Silesia and Prussia, and has commenced its advance, earlier than was expected, with three army corps, from Warsaw towards the Oder.

The Prussian Vth Army Corps is driven back by superior force, on October 1st, as far as Drossen; the IIInd Army Corps is at Stettin, concentrated and ready to march; the Corps of Guards has not yet completed its mobilization at Berlin.

On the same day, the IIInd Army Corps of the Eastern Army, after having invested Posen, has pushed forward to Zielenzig. The Russian Guards and 1st Army Corps have invested Thorn and have advanced by Bromberg on Filehne.

The railways which existed in 1862 are shown, so far as they come within the scope of the staff tour, in the sketch.

Comparing the general idea for the 1862 tour with that of the 1858 tour (sketch 1 (a)),* we note the following principal points of similarity: The main attack of the Russians is directed by Thorn on Berlin. Part of the force advances against Silesia, to the defence of which province two army corps (that is, four divisions, as in 1858) are allotted.

But there are important points of difference. It is assumed that the four divisions which have to defend Silesia are already concentrated at Breslau. The reason for this is probably that the Silesian Army no longer consisted, as in 1858, of the VIth Army Corps strengthened by one division each from the IVth and Vth Army Corps (the 8th and 9th Divisions), but of the VIth Army Corps and the whole of the IIIrd Army Corps (7th and 8th Divisions). This IIIrd Army Corps, whose peace Headquarters were in Berlin, was the one which could be mobilized most quickly. This explains why the two Prussian army corps in Silesia are assumed to have concentrated. The political situation already mentioned, which also entailed military measures directed against France, enables us to understand why, besides the two Rhenish Army Corps (VIIth and VIIIth) the then nearest Army Corps, The IVth, from Magdeburg, was also moved to the Rhine.

These circumstances, taken in conjunction with the Russian preparations for war in Poland in 1862, make it clear that the main Prussian Army could not, as in 1858, be assumed to be assembled at Bromberg, but that, in fact, no such main Army existed. The sudden offensive of the Russians and the assumed situation,

* Not reproduced.

in which Prussia was engaged in war on two separate fronts, rendered it necessary to use five of the nine then existing Prussian army corps for the defence of the Rhine and Silesia. The 1st Army Corps, at Königsberg, was practically cut off, at any rate by land. There remained, therefore, only three army corps to be employed directly against the Russian main body, which was also three army corps strong. But the three Prussian army corps were not yet concentrated, and one of them, the Guards, was not yet ready. Therefore two separated army corps stood opposed to three concentrated army corps. And the operations of these two hostile Armies formed the subject of the staff tour.

Accordingly, the special idea ran as follows:—

(a) *For the Eastern (Russian) Army:*

While the left flank Army, assembled at Czenstochau, will endeavour to hold the superior force of the enemy in Silesia, the Eastern Army will attack the Prussian army corps opposed to it in detail, or will force them to give battle by a rapid movement on Berlin, in order to attain an immediate and decisive result by the occupation of the enemy's capital.

The Prussian Guards Army Corps will require 10 to 14 days more before it can take the field. The bridges over the Oder at Crossen and Frankfort are reported to be prepared for destruction, and both of these places are garrisoned by infantry and artillery.

The enemy is working at entrenchments immediately to the east of Cüstrin.

After their continuous marching, the (Russian) Guards and 1st Army Corps are to have a day of rest on October 2nd.

(b) *For the Western (Prussian) Army:*

The Prussian Guards still require 10 to 14 days before they can take the field as a whole. They are under the orders of the Central Government in Berlin.

The Commander of the 11nd and Vth Army Corps will concentrate his forces as quickly as possible, and based upon Cüstrin, will endeavour to hold the right bank of the Oder offensively. If this proves impossible, he will act on the defensive on the left bank.

Frankfort on the Oder is held by a battalion and by half a battery from the mobile armament of Cüstrin, and the bridge is prepared for destruction.

Crossen is held by a detachment from Silesia.

Reliable reports from Filehne state that the enemy's army corps of Guards and 1st Army Corps will have a day of rest at that place on October 2nd.

On the Prussian side, the 11nd Army Corps was brought up by rail from Stettin to reinforce the Vth Army Corps.

In the course of the 12 days' operations of the staff tour, the Western Army, consisting of the Vth and IIInd Army Corps, concentrated at Cüstrin, retired before the superior force of the three Russian army corps to the left bank of the Oder. The Russians crossed the Oder at Schwedt and advanced on Berlin.

The commander of the Western Army resolved not to give battle till his own army corps of Guards was up, but to defend the line of the Finow Canal. General Moltke remarked on this point :

"The Finow Canal is suitable for defence by a rear guard, but is not a position to give battle in."

Concerning the idea of a Prussian flanking position at Wolsickendorf, facing north, Moltke writes :

"A flanking position at Wolsickendorf, which the enemy cannot pass by without attacking."

He says later :

"Whether we may assume that this attack will be made, depends on the strength of the position, and upon the tactical situation of the enemy's columns as they emerge from the wood, which could only be judged upon the spot."

In this tour we see, once more, the operations of still dispersed forces against a concentrated and numerically superior enemy, followed by the employment of a flanking position.

B. GENERAL STAFF TOURS BASED ON A WAR BETWEEN PRUSSIA AND THE SMALLER GERMAN STATES.

The tours of 1865 and 1868 were based on a state of war between Prussia and the lesser German States. The scheme of the 1865 tour stands alone as being one which can hardly be said to be based on an actual situation, and which does not correspond with historical facts. The object of the tour was the practice of flanking operations. The general scheme of the tour is shown in sketch 2 (a).*

Briefly, the general idea was as follows :—

The main bodies of the opposing Armies are still mobilizing. Each party has one army corps ready to fight, and has advanced it as shown in the sketch.*

The stronger Eastern Force (30,000 men) has received orders :

"To take a rapid offensive, in order to hinder the concentration of the enemy's forces in Thuringia, and to obtain successes against individual portions of them."

The weaker Western Force (22,000 men) had to prevent this.

The shortest route for the Eastern Army Corps to the area of concentration of the Western main force (at Nordhausen)

* Not reproduced.

led to the north of the Unstrut, and the Eastern Army Corps had to advance by this road. As Moltke conceived the task of the Western Army Corps opposed to it :

“ It operates on the flank of this advance.”

But, as a matter of fact, in the course of the tour both adversaries marched nearly on a level with each other, on opposite banks of the Unstrut, without coming to any serious engagement.

Therefore, Moltke criticizes the futile parallel march of the Western Army Corps :

“ The intention of this army corps, as declared at the outset, was to operate on the flank of the enemy. But it cannot do so unless it holds tenaciously to the Unstrut, and makes a stand there when the conditions are favourable.”

Thus in employing flanking positions Moltke attaches the greatest importance to manœuvring. And thereby he understands an active attitude of the weaker force, which must be ready to take the offensive at once if the numerically superior enemy attempts to pass it by. In this case, if the Eastern force attempted to pass by the Western force and to advance direct on Nordhausen, the Western force was at once to take the offensive in order to force the enemy to form front to the south, and so to divert him from his intended objective. If the weaker Western force found the local conditions unfavourable for a decisive battle, it could withdraw to the south, still keeping in readiness to attack the enemy in flank and rear in case he should lose touch with it in order to continue his advance on Nordhausen.

We shall see flanking operations carried out in this manner in the course of the tours of 1860 and 1869.

The staff tour of 1868, like that of 1867, was based on the historical situation in the War of 1866.

It clearly illustrates the conscientious thoroughness of the great strategist, who had to bear the responsibility for the operations in that war.

The War of 1866 had been successfully waged by Prussia, not only against Austria, but against the lesser German States.

But Moltke wished to demonstrate the steps which would have had to be taken if the enemy had acted otherwise than he actually did in 1866. Such operations on the part of the enemy would naturally have been directed against momentarily-exposed weak points of the Prussians, and such weak points actually existed in 1866.

In spite of our present knowledge of the opposing commanders, it would be a waste of time to discuss the question whether the fortune of war might have been altered. I will confine myself to pointing out the fact that Moltke, after the

victorious campaign, proceeded to test the soundness of the measures which he had actually adopted, or would have adopted.

The scheme of these two staff tours certainly constitutes a most instructive criticism of the enemy's operations in 1866, by the man best qualified to judge of them.

The staff tour of 1868 is based on the situation which actually existed in Central Germany on June 30th, 1866. [See sketch 2 (b)*]

At that time the Hanoverian Army had already capitulated at Langensalza, and the 45,000 Prussians were concentrated and ready to commence operations against the 80,000 South Germans, whose forces were, however, still separated.

The sketch* shows the VIIth Bavarian Army Corps approaching the Prussian forces, with the object of helping the Hanoverians, whose fate, however, was already decided. The VIIIth Army Corps, consisting of troops from Württemburg and Hesse, and of one Austrian brigade, was at Frankfort, and was only then ready to move.

Accordingly, the general idea embodied the following tasks:—"The Southern Army, neglecting all minor considerations, will endeavour to concentrate its forces, in order to attack the enemy with superior force. The Northern Army will endeavour to profit as much as possible by the present separation of the enemy's forces."

The special idea was in substance as follows:—

Northern Army:

The principal object of the Northern Army is to hinder the South German forces from exerting any influence upon the operations in Bohemia.

This purpose will be most completely served by an offensive movement which holds the enemy more firmly the further it advances, which protects the Rhineland and Thuringia, and which affords the advantage of occupying foreign territory.

But it must be remembered that the loss of a battle, in view of the enemy's superior force, would be very disadvantageous, both from a military and from a political point of view.

Southern Army:

The Commander of the force, who is with the VIIth Army Corps, communicates to the VIIIth Army Corps the news of the capitulation of the Hanoverian Army, which has just been received.

The 4th Division of the VIIIth Army Corps, and the still incomplete Reserve Cavalry, are to remain at Frankfort on the Main in observation of the Prussian Rhine Province, while the rest of the army corps (three divisions) is to unite with the VIIth Army Corps for joint operations.

* Not reproduced.

In this tour we again see Moltke practising the junction of separated army corps, with the object of not exposing them to any check in face of the concentrated enemy.

After the Southern Army had effected a junction, it should, according to Moltke's ideas, have assumed the offensive at once. Concerning the encounter of the adversaries, which would then have become a possibility, and its consequences, Moltke writes :

" The offensive movement of the Northern Army in the Thuringian Forest against the Bavarian divisions, and the entry into the combat of the VIIIth Allied Army Corps, would have led to combats on July 11th and 12th, the result of which cannot be decided at a staff tour. But in any event the Southern force would have been obliged to make a temporary halt in its advance. And the Northern Army, unless it obtained a decisive success, would no longer have been able to maintain itself in the Thuringian Forest, on grounds of supply alone; it would, therefore, have been obliged to retire to the north and west slopes of the Thuringian hills."

Thus in Moltke's opinion a retreat of the Northern Army would have been the possible result of the united action of the two army corps of the Southern force. But we know that in 1866 these two army corps did not adopt the only correct military course, and unite; on the contrary, possibly owing to the impression created by the result of the battle of Königgratz, which had reached them in the meantime, they retired on diverging lines, each to its own starting point, namely, the VIIIth Army Corps to Frankfort, and the VIIth Army Corps to the south and across the Main into Bavaria.

The importance attached by Moltke to supply considerations is worth noting; he considered that this consideration alone would oblige the Northern Army to retire behind the Thuringian Forest.

C. GENERAL STAFF TOURS BASED ON A WAR BETWEEN PRUSSIA AND FRANCE.

The staff tours which took place in the years 1859 and 1861 were based on the assumption of a state of war with France. The schemes are taken from the actual projects of operations then existing, and are identical with them in almost every detail.

The schemes of these tours show that Moltke utilized the General Staff tours to clear up concrete questions, and that he worked over his actual plans of operations on the projected theatre of war, so far as this was possible within his own frontier. The conception and execution of these two tours illustrate Moltke's idea of the active defence of the Rhine by means of flanking operations. And, in the then existing concrete

preparations for a war with France, these flanking operations were provided for.

In the year 1859, Moltke had been only two years at the head of the Prussian General Staff. As is well known, the political events of this year rendered a war with France far from improbable, and Moltke drew up a number of plans of operations against France. These are almost identical with the scheme for the staff tour of 1859, illustrated in sketch 3.* This tour did not take place till October, near the end of the year, when the danger of war was, for the time, no longer imminent. But Moltke wished to utilize this tour in order to test his plans, which had so nearly been carried out in the summer months, so far as could be done in such a tour.

The scheme is shown by the sketch.* Austria, the German Confederation, and Belgium are allied with Prussia against France; this combination, in view of the situation in 1859, was by no means an improbable one.

It is assumed that the French are ready deployed for battle, while the Prussian, German, and Austrian army corps are for the most part still on the march. The only Allied troops assumed to have arrived, at war strength, in the positions shown in the sketch,* are the two Prussian Frontier Army Corps (VIIth and VIIIth, from Westphalia and the Rhine Province), and the IVth Army Corps from Magdeburg.

The IVth Army Corps is detailed to support the Belgian Army. The VIIth and VIIIth Army Corps ("Army of the Moselle") are to operate, according to circumstances, either with the "Army of the Rhine" (IVth, IIIrd, IIInd, and Xth Army Corps, and the Belgians) or with the "Army of the Main" (the Vth, VIth, and IXth Army Corps).

But since the assembly of these main Armies, that of the Rhine and that of the Main, may take several weeks, therefore "the immediate object of the Army of the Moselle is to protect the frontier, and to hinder the enemy from laying siege to Saarlouis and Luxemburg for as long a period as possible. The commander will not accept battle with the Army of Metz (80,000 men) except under specially favourable conditions. If the Army of the Moselle is forced to retire, this retreat must be so slow and in such a direction that the Army can unite with the IVth Army Corps or with the Army of the Rhine."

For the French Army, the tasks were in substance as follows:—

The main operation is to be executed by the Army assembled at Lille and Valenciennes (200,000 men), which is to make a rapid advance through Belgium to the Rhine.

The Army at Strassburg (120,000 men) is at first to remain facing the Austrian and South German forces; but it is to be ready to advance at once against the left flank of the Prussian Army of the Main, in case this advances towards the Palatinate.

* Not reproduced.

The Army at Metz is to co-operate in the main operation, by simultaneously penetrating into the Prussian Rhine Province; it is to attack the Prussian army corps on the Moselle in superior force, to defeat it, and to prevent it from uniting with the IVth Army Corps and the Belgians.

In the course of the staff tour the Prussian Army of the Moselle retired by sections before the numerically superior French Army of Metz, and retreated by Prüm towards Cologne, where it effected a junction with the main body of the IVth Army Corps.

Moltke's actual plan of operations, drawn up less than six months later (in the spring of 1860) is, in fact, a development of the above ideas. It is no doubt based upon the views, impressions and experiences gathered in the course of this tour. (See Moltke's Military Correspondence, from The Official Documents of the War of 1870-71. Section I., paragraph 3).

The staff tour of 1861 may be considered as a continuation of that of 1859. (See sketch 4*). The only difference in the scheme is that the VIIth Army Corps is assumed to be still on the march, while the IVth Army Corps is already deployed, and is in another place. In other respects the scheme is based on the sequence of events during the tour of 1859.

It is assumed that the French advance from Metz, in superior force, drove back the Prussian Army Corps, assembled on this occasion at Treves, towards Cologne. In the meantime, the French main Army had advanced through Belgium, with a suitable guard against the Belgian Army, and its main body had reached Liège. The remainder of the Army of Metz, that is the 55,000 men who had arrived west of Cologne, were also placed under the orders of the commander of the main Army, whose task was as follows:—

“ . . . Thus strengthened, your skilful handling of the situation will enable you to prevent the junction, if attempted, between a part of the Army in the Palatinate with the Prussian Army of the Rhine. You will, if possible, force the latter back behind the Rhine before it receives any reinforcements, or else you will seize the inner line of operations between both portions of the enemy's forces, so that you can throw yourself in superior force upon either the one or the other.

“ The winning of a battle will render it possible to cross the Rhine and to cover the siege of Cologne, which is to be commenced at once.”

A second set of instructions lays stress upon the prevention of the junction of the Armies of the Rhine and of the Main, and indicates the desirability of forcing the former back across

* Not reproduced.

the Rhine, and then throwing the French main Army upon the Army of the Main.

The commander of the Prussian Army of the Rhine, who is also placed in command of the Army of the Main, is directed to carry out his further movements with a view :

" to effect a direct junction, as soon as possible, with the Army of the Main. You are to avoid standing an attack in superior force until then; in the meantime it is most desirable that our young soldiers should be broken in to fighting (*aguerrir*) by minor successes. You will therefore lose no opportunity, where the dispersion of the enemy's forces affords hope of success, without endangering your main object.

" The important depôts of Cologne, Bonn, and Coblenz enable you to base your operations upon any one of these points, as the enemy's weak force of observation in front of Coblenz must inevitably retire upon the approach of the Army of the Main."

A second set of instructions for the Prussian Headquarters is in continuation of the first set, the main points being as follows :—

" It is important, on political as well as on military grounds, to open the campaign as soon as possible, and to expel the foreign invasion from the province of the left of the Rhine.

" The plan of assembling the Armies of the Rhine and of the Main by marches along the right bank is discarded, and these are ordered to effect a junction to the front, on the left bank.

" The objective, namely, union or co-operation, can be attained only if the Armies of the Rhine and of the Main at once commence a forward converging movement, so as to meet each other half-way. The left bank of the Lower Moselle is about as far from Neuse and Mannheim as it is from Liège. A junction would therefore be difficult, and there would be a danger of being driven back against the Rhine, but for the fact that the French Army of the Maas is obliged, in the first place, to support its northern advanced detachments, and that the Army of the Rhine is able to place great difficulties in the way of the advance of the enemy to the south-east, by making skilful use of the country, without exposing itself to a general engagement.

" Your Excellency will therefore gain as much ground to the front as possible with the Army of the Rhine, so long as you can command superior force. You will so order your strategic deployment that the lines of retreat from it to the point selected by you for effecting a junction

with the Army of the Main are as nearly as practicable perpendicular to your front.

" You will commence this retreat to the point of junction as soon as you have got into touch with the enemy's main body, and you will cover the movement by a strong rear-guard, which, if you are defeated, will follow in the line of your retreat."

This most interesting operation, which the Army of the Rhine has to carry out, includes the following tasks:—An advance with three army corps (the IIIrd, VIIth, and VIIIth) against the enemy's weaker advanced bodies west of Cologne (55,000 men); shifting the base of the Army from Cologne to Coblenz, and a well-timed retreat in this direction with the object of effecting a junction with the Army of the Main. The execution of these tasks is certainly a difficult matter.

It pre-supposes in the first place a high degree of skill on the part of the commander, who must be able to seize the exact moment to retreat, before the possibility of a check arises. A great deal is also expected of the subordinate commanders. They must work in perfect accord with the commander's intentions; they must not get out of hand, either to the front as at Wörth and Spicheran, or to the rear as at Trautenua.

A bold and enterprising enemy will render the successful conduct of such operations of advanced army corps and groups of Armies a most difficult matter.

Ulm, Magenta, Jicin, Roggnitz, Nachod, and Skalitz are historical instances of this. It is interesting to note Moltke's judgment on the battle of Magenta:—

" Gyulai is to be blamed, not for failing to support Count Clam in time, but, in my opinion, for failing to withdraw him before he required support."

At Regensburg it was only a series of fortunate accidents which enabled Marshal Davout to withdraw from his difficult position without a check.

Moltke was fully persuaded of the difficulty of such operations, and he therefore practised them almost every year at his staff tours. They also played an important part in his then existing preparations for war.

It must once more be repeated that it is only a strong commander, a highly-trained General Staff, and well-disciplined and well-trained troops, that can overcome these difficulties, which always have occurred, and always will occur.

I will revert to this most instructive subject when discussing the conference on the General Staff tour of 1867.

D. GENERAL STAFF TOURS BASED ON A WAR BETWEEN PRUSSIA AND AUSTRIA.

The three tours based on a state of war with Austria have this characteristic in common, that the available Prussian forces

are assumed to be numerically weaker than the Austrian forces. This is at least the case in the immediate theatre of war, as, for instance, at the beginning of the operations.

This circumstance afforded an opportunity, in the tours of 1860 and 1869, of practising flanking operations on the Elbe. I have already pointed out that Moltke considered that flanking operations, on the part of the weaker adversary, not only facilitate his task, but enable him to assume an offensive attitude.

As regards the object of the tour of 1860, Moltke himself writes, in the "General Situation," on which the tour was based :—

" At this year's tour, the intention is to *test* the indirect defence of an important section of territory."

In the spring of 1860, Moltke worked out his first plan of operations against Austria. The area of concentration selected in this plan is the same as that assumed for the staff tour (see sketch 5a*). But in the tour it is assumed that the Ist, IIInd and Vth Army Corps (Königsberg, Stettin and Posen) are still on the Vistula and on the Warthe, while in the plan of operations the Ist and IIInd Army Corps are to deploy at and east of Wittenberg, and the Vth Army Corps south of Kottbus.

Thus the scheme for the staff tour assumes the concentration of the first available troops, namely, the two Berlin Army Corps (The Guards and the IIIrd), and then the Magdeburg (IVth) Army Corps.

It is important to note that the tour took place in the autumn of 1860, that is six months later than the framing of the plan of operations.

In this plan of operations, or concrete preparation for war, Moltke says :—

" The first place of assembly of our forces must therefore lie further west than Görlitz, and nearer the Elbe; and Silesia must be protected by a force specially detached from the Army.

" We must at once decide whether we are to adopt the direct or the indirect defence of the capital."

As regards the direct defence, Moltke writes :—

" If we are defeated in the battle against the enemy's superior force, we shall probably also lose Berlin; and, if vigorously pursued, we risk being driven back to Stettin.

" But the conditions are different if the retreat is not upon Berlin, but behind the Elbe.

" We certainly do not believe that a flanking position behind the Elbe would prevent or even hinder the enemy from crossing this river and advancing on Berlin, but we do expect this result from an offensive based on the Elbe.

" If the offensive movement from the Elbe succeeds, it will drive back the enemy from Bohemia into the still

* Not reproduced.

unconquered Silesia. If it fails, then we shall find, behind the river, a more complete protection, and one which is closer at hand, than any we should find in a northerly direction. And the fortresses will enable us to issue afresh from our shelter in the shortest possible time.

"This indirect defence will enable us to hold out the longer, the higher up the river it is commenced. Therefore we shall hardly have to employ more than one army corps for the defence of Silesia."

It was these flanking operations from the Elbe, planned in the spring of 1860 in preparation for war, that Moltke wished to test in the following autumn at the staff tour.

This again shows the connection between the General Staff tours and the actual preparations for war. Further, it shows the *offensive* character of the flanking operations as conceived by Moltke.

In the course of the 1860 staff tour, the Austrians and Saxons effected a junction, principally by rail. There then followed some eight days of operations on the Elbe, in the district between Torgau and Wittenberg.

From the experience gained in this tour, Moltke seems to have come to the conclusion that a flanking operation based on the Elbe, as above described, would have a good prospect of success.

In connection with the tour of 1860, we may consider that of 1869, because in this tour flanking operations on the Elbe again constitute the principal object of the exercise.

The strategical conditions in the two tours are, however, quite different.

In 1860 it was assumed that the assembly of the Prussian forces was not yet completed, and that Prussia was therefore constrained to adopt a more defensive attitude behind the Elbe.

But in 1869 Prussia, or the North German Confederation, had been materially strengthened. The military reform had been completed; the victorious campaign of 1866 added three new army corps to the Prussian Army from the conquered provinces (the IXth, Xth and XIth), and, moreover, secured the assistance of the Saxon (XIIth) Army Corps. Thus the North German Army counted 13 army corps, including the Guards.

The plan of operations against Austria, which Moltke certainly worked out after 1866, has, naturally, not been published; but its leading idea may be inferred from his former works, and from the staff tour of 1869, to have been as follows:

In the Memorandum of 1860, which dealt with the measures to be adopted in the event of a war with Austria, Moltke wrote:—

"If Prussia intended to wage an offensive war against Austria, she would assemble her Army in Silesia, whose frontier lies within 120 miles of Vienna."

In a preparatory scheme framed in the winter of 1865-66, he writes:—

“Certainly the soundest plan would be to assemble the Army in Upper Silesia, with a view to an advance on Vienna, if we were able to take the field in the theatre of war materially earlier, and in greater force, than Austria. But neither of these conditions holds good.”

But by 1869 these conditions had materially altered. There is, therefore, hardly any doubt that Prussia would, at that time, have adopted offensive methods in a war with Austria, and would for this purpose have assembled her Army in Prussian Silesia.

The above considerations show the close connection between Moltke's war projects and the staff tours directed by him, and explain the reason why none of his other staff tours have been published.

The general idea for the staff tour of 1869 ran as follows:—

“At the commencement of a war, the two main Armies, in about equal strength, stand opposed to one another in Upper Silesia and in Moravia.

“On the Prussian side, there remain in the Leusitz mountains (near Dresden—*transl.*) only three army corps, constituting the Northern Army, 84,000 strong, intended to protect the frontier and Berlin against invasion from the south.

“The enemy has four army corps and two cavalry divisions, constituting the Southern Army, in Northern Bohemia, 120,000 strong, and available for offensive action. Their rearward communications are adequately secured by troops posted in the Riesengebirge, furnished by the main Army in Moravia.”

The following tasks were allotted to the two adversaries:—

“The Northern Army has to prevent the enemy, assembled in Northern Bohemia, from advancing.

“If it is not attacked, it must conclude that the enemy has moved troops towards Silesia, and in this event it must take the offensive south of the Riesengebirge.

“The Northern Army has therefore to avoid a decisive combat against superior force, since it may be possible to bring up, by the two existing railways, reinforcements in time for the decisive battle before Berlin. It is therefore important to gain as much time as possible.

“The Northern Army is expected to dispute the passage of the frontier range of mountains by the enemy. But if it cannot hold out in this neighbourhood, and if the commander should prefer a flank defence based on the Elbe to direct defence, then it is at least necessary that the capital shall be protected, by a force posted on the direct road to the capital and retiring upon it, against raids by small parties of the enemy.

"The task of the Southern Army is to press forward quickly towards Berlin; to attack the enemy wherever he makes a stand; to defeat him, and to occupy the enemy's capital."

In the course of the tour, the situation led to flanking operations on the Elbe, which, in Moltke's opinion, constituted the soundest procedure on the part of the Prussians.

The General Staff tour of 1867 is especially interesting.

It was based on the actual situation of the Prussian and Austrian Armies on June 11th, 1866. Moreover, the movement to the left of the First and Second Prussian Armies, which actually took place, was embodied in the scheme.

Moltke departed from the historical course of events in that he assumed that the Austrian main body from Moravia was not marching on Bohemia, but that the Austrian commander had resolved, after quickly and closely concentrating his force in North Moravia, to take the offensive in the direction of Silesia.

Moltke's reason for making this assumption, and his conception of this operation, are clear if we recall the whole military situation of Prussia as opposed to Austria immediately before the outbreak of war in 1866.

The concentration by rail of the Prussian Army was completed on June 5th, 1866. But the war did not commence at once, as Moltke and Bismarck would have wished it to do.

Moltke, speaking in the presence of the King on May 25th, 1866, said:—

"From a military point of view, it is urgently desirable that the diplomatic action be terminated by June 5th.

"The quickest way of effecting our concentration is to the front, that is, by offensive action."

This lecture, which was practically a council of war,¹ was attended not only by the King, but by the Army Commanders with their General Staffs and Quartermaster-Generals.

On the same day, after the lecture, Moltke wrote to Prince Frederick Charles, commanding the First Army, explaining that the concentration of all the Armies could be effected in a few marches. "But if we remain standing, it will certainly be more difficult."

This "stand fast" of the Prussian Army in its widely-separated first positions, especially in the positions in which it detrained, actually occurred, for the King would not give his consent to the declaration of war. Thus, in the first place, the "concentration to the front by means of an offensive movement on Bohemia," as planned by Moltke, became impossible. In the second place, the Armies could not be left so widely separated up to the time of the declaration of war, the moment

¹ See Moltke's Work as Chief of the Staff in Peace Time.

of which was uncertain. Therefore Moltke resolved to effect the concentration in Prussian territory by a movement of the Armies to the left.

Accordingly the IIInd and IVth Army Corps, then on the right bank of the Elbe, were ordered to march to the east, into the area shown on the sketch* as the situation of June 11th. The result of this was that the Ist Army Corps was shifted from its original headquarters at Görlitz to Hirschberg.

Moltke explained the reason for these measures in a lecture delivered before the King on June 3rd, 1866. He stated that, in view of the whole position of the Austrian Northern Army, it was less probable that this Army would move on the Upper Iser than that the enemy's operations would be directed against Silesia, and that therefore the Ist Army Corps must at once be handed over to reinforce the Second Army. . . . "If we can no longer hope to give battle in Upper Bohemia, then the First Army will continue its march without delay, in order to get into line with the Second Army as soon as possible. It will depend on the situation in Silesia whether this further march will take place to the north or to the south of the Riesengebirge, or whether General von Herwarth (commanding the Army of the Elbe, half the VIIth, and the VIIIth Army Corps) will have to reinforce the First Army in Bohemia directly, and whether this will have to reinforce the Second Army in Silesia." Moltke then concludes: "The Second Army must be reinforced, and that as soon as possible."

The whole of these measures were sanctioned by the King, and were carried out by June 11th. And thus arose the situation shown in the sketch.*

On June 9th, 1866, that is, at a time when the First Army was engaged in carrying out this movement to the left, Moltke, then in Berlin, received a despatch from the Chief of the Staff of the Second Army, General von Blumenthal, in which the latter stated—as a formal report, for his information, of a step already decided upon—that the main body of the Second Army would move off from its position north of the Riesengebirge on June 11th, and take up a position, concentrated as far as possible, on the Neisse, in order to meet an advance of the Austrians on Silesia.

"If the enemy advances on the left bank of the Oder, we will hold him in check; even if he advances in superior force we shall accept battle."

So wrote General Blumenthal.

According to this, the commander of the Second Army, which then consisted only of the Ist, Vth, and VIth Army Corps, wished to pit himself against the Austrian main Army—three Prussian against six Austrian army corps! If we remember that one of these, the Ist Army Corps, retired before a single

* Not reproduced.

attacking Austrian army corps at Trautenau, General Blumenthal's optimism in wishing to face a two-fold superiority in numbers seems unjustified.

We can easily understand that Moltke could not sanction this isolated advance of the Second Army. We have seen in all his staff tours that he attached great importance to not allowing individual portions of his force to engage in decisive combats against superior numbers, and to waiting till all his available forces were united.

Both in his actual plans of operations, and his handling of the Army in the campaigns of 1866 and 1870-71, Moltke acted upon this principle.

He was therefore obliged to disapprove of this rash operation in which the Second Army was about to engage.

But Moltke had a deep knowledge of human nature, and he did not wish to discourage the men of action, whose value in leading an Army he fully appreciated; moreover, he did not wish to hurt the personal feelings of the Crown Prince, commanding the Army, and of General von Blumenthal.

Therefore, immediately on receipt of the letter, he telegraphed to General von Blumenthal:—

“As His Majesty has retained the direction of operations in his own hands, no material alterations in the disposition of the Army can take place without his sanction. I am in agreement, in substance, with your views.”

Following this telegram, he sent a letter to Blumenthal, of which the main points are as follows:—

“Do not conclude from my telegram of to-day that there is any intention, when once operations in face of the enemy have commenced, of hampering them by any orders from headquarters. My whole endeavours will be directed to preventing any such thing from taking place. But the general instructions, as to whether an Army is to act on the offensive or on the defensive, and as to whether it is to advance or retire, can only be issued by His Majesty; for the movements of one Army must necessarily be in concert with those of other Armies.

“The proposal to take up a position behind the Neisse with the Second Army, leaving a detachment of some strength at Landshut or Schweidnitz, seems to me to be *in itself* perfectly sound.

“But such a measure must necessarily coincide with a simultaneous advance of the First Army. . . .

“If the First Army remains in its dispersed cantonments in the Lausitz mountains, then it will be completely separated from the Second Army as soon as the latter has advanced some five marches alone. I will ask you to consider whether it would be advisable, in the circumstances, to occupy the proposed position on the Neisse, with the VIth Army Corps for the time being unsupported. . . .

"I have to-day laid before His Majesty that portion of your letter which relates to the position on the Neisse, when I stated that I was quite in favour of your plan, but that I considered that the advance of the First Army was also necessary."

On the next day, June 10th, the King sanctioned the march of the Second Army to the Neisse. Moltke accompanied this order with a letter to General von Blumenthal. The most important of Moltke's ideas therein embodied are as follows:—

"The disadvantage entailed by the advance of the Second Army, of a fresh separation from the First Army, is compensated for as far as possible by the fact that the latter is to-day receiving orders to continue its flank march to Görlitz.

"Since we are leaving the initiative to the Austrians, you will have effected your concentration beforehand. I believe that within 24 hours you will be able to appear before Neisse with the IIInd, Xth, VIth, and perhaps part of the IVth Army Corps, in all some 100,000 men.

"Do you not think that it would be better to take up a position, not on the river, but behind it?

"The Ist Austrian Army Corps can no longer co-operate with the attack in Silesia, but Benedek can still bring up the IIIrd and VIIth Army Corps a few days later to join in his offensive movement.

"I believe that you will share my view, that nothing could be more disadvantageous than that we should fight on the Neisse against a decisive superiority, while we could assemble seven army corps from five to six days later, on the line Schweidnitz—Breslau.

"Unless we learn, before then, that, besides the Austrian Ist Army Corps, another army corps has moved off to the defence of Bohemia, I consider it certain that you will have six army corps in front of you. Certainly these will not be all united on the first day; and if you are obliged to retreat, this will certainly afford opportunities for successful rearguard actions along the line of the mountains.

"You, being on the spot, will be able to judge better than I can judge here; I only wish to warn you against allowing yourself to be drawn into a battle irrespective of the situation. It is certainly much easier to advise holding out at any cost, than to advise a retreat, however necessary this may be."

But these well-founded and well-put arguments had little weight with Blumenthal, for in his answer of June 13th he writes to the Chief of the General Staff:—

"... On the next day (the 19th) the Army is to concentrate still more closely; the left wing, especially, is to be brought close up, and, generally, a fighting formation is to be adopted, from which we can meet the enemy in strong force wherever he makes his main attack. . . .

"Should the enemy venture to attempt to crush our left wing, he will experience a stout resistance; and we shall not forget that a vigorous offensive against his own left wing is the means most conducive to victory."

"The whole of this perhaps sounds rash, foolhardy, and overbearing; but Your Excellency may be satisfied that we shall only act after careful deliberation, and with the caution which is urgently necessitated by the situation. Our task is predominantly a defensive one, and if I here speak of the offensive, it only means that we wish to lose no obvious favourable opportunity, and not to adhere blindly to the defensive."

From the foregoing we may certainly infer that the advanced position of the Prussian Second Army in 1866 was contrary to Moltke's inmost convictions.

His own deep insight, and the lessons of military history, showed him the imminent danger to which the Second Army was exposed. In the early "sixties" Moltke had worked out two specially instructive historical examples, namely, the operations of 1809 around Regensburg, and the events at Magenta in 1859. In his study of the Regensburg campaign, Moltke pointed out that the Austrians, if their operations had been sound, would have been able to annihilate Davoust's French army corps, before Napoleon could withdraw it from the dangerous situation in which Berthier had placed it.

Regarding the combats of the Austrian 1st Army Corps at Magenta against a superior force of the Allies, Moltke writes, as already mentioned:—

"Gyulai is to be blamed, not for failing to support Clam-Gallas, but for failing to withdraw him before he required support."

A year after the war, in order to make it quite clear how the operations would have had to be conducted if the Prussian Second Army had been attacked suddenly and in superior force by the Austrian main Army from Moravia and Silesia, Moltke made these events the subject of a staff tour.

In his remarks on the preliminary work of the commander of the Northern Force (the Second Prussian Army), Moltke says:—

"The unexpected rapid advance of the Southern Army rendered it impossible for the Northern Army to complete its concentration before the commencement of hostilities. The Second Army therefore does well not to accept a decisive engagement behind the Neisse, but to commence its retreat. For this, the whole situation points to the direction along the range of mountains."

"To gain this direction, the left wing must make a backward wheel. The right wing, being the pivot, must therefore hold out tenaciously for the space of one day."

Sketch 6* shows how closely the six Austrian army corps were grouped opposite to the four Prussian army corps, and the extent to which the communications of the latter with their First Army were endangered. The First Army was nearly seven days' march distant, at Görlitz.

In the course of the tour, the backward wheel of the Second Army, and its retreat, with rear-guard actions, were carried out; and the Second Army finally effected a junction, in the neighbourhood of Schweidnitz, with the First Army, which was brought up from Görlitz. While the Second Army, generally speaking, retired to the ground from which it had advanced, the First Army formed up on its northern flank; thus the Prussian Army had, by its junction, secured numerical superiority over the enemy, and was in a position to commence the decisive battle. The conduct of this battle was not discussed during the tour.

It is impossible to prove whether these operations of the Second Prussian Army would have been successful or not, in spite of our present knowledge of the commanders. Yet it is permissible to point out that the operation depended essentially upon the stand made by the pivot army corps; and to repeat that at Trautenau one Austrian army corps succeeded in forcing one Prussian army corps to retreat. If then the pivot army corps had been in danger of being forced to retreat prematurely, would not Blumenthal have attempted to reinforce it? Or would not the Prussian army corps commanders themselves have moved to its support, as at Spicheren, Wörth, and Vionville? Thus a general battle might perhaps have ensued, contrary to the intentions of the commander. And the Austrians had an almost two-fold superiority in numbers. Such a stand certainly succeeded at Vionville, but in that case the necessary reinforcements arrived on the following and the next following days. On the Neisse this was impossible, for the First Army was seven marches behind.

The situation recalls that at Jicin, where two advanced army corps were not withdrawn in time.

The above is merely to show in what a difficult situation the Second Prussian Army, in 1866, might have found itself involved. And the best method of operating, in order to extricate it from this situation, which had arisen in opposition to Moltke's inmost convictions, was what he wished to determine and to practise in the General Staff tour.

Besides the danger incurred by the Second Army owing to its isolated position on the Neisse, there arose a second danger as the direct consequence of the first, namely, the separation of the First and Second Armies between June 20th and 30th, 1866, while the Austrian main Army was moving from Moravia towards Bohemia.

* Not reproduced.

The Austrian main Army was marching in the general direction of Josefstadt, that is, between the two Prussian groups of Armies. It was thus working on interior lines, and had the power to attack either the First or the Second Prussian Army in superior force. But opinions are divided as to the chances of success of such an attack.

Sketch 6* shows that the junction of the Prussian Armies, ordered to be effected near Jicin, almost constitutes a retreat of the Second Army from its position on the Neisse. It further shows that this march was seriously endangered in flank by the Austrian movement from Moravia on Josefstadt. This danger is illustrated by the combats of Trautenau, Skalitz and Nachod. Thus the Austrian tactics succeeded in touching the weak points of the enemy's strategy, yet without taking full advantage of them.

Here we must point out once more that the difficult situation in which both the Prussian Armies were involved was the result of the exposed situation of the Second Army on the Neisse. And it follows, from the whole of the foregoing, that this position was taken up in opposition to Moltke's views.

Perhaps it was his experience of the exposed situation of the Second Army in 1866 which induced Moltke, in 1870, to order the movements of the exposed First Army (Steinmetz) so strictly.

He first withdrew this Army, by a definite order, 12 miles to the rear, in order that it should not be exposed to defeat while isolated; and he arranged for the withdrawal of this Army for a further distance of 18 miles. In answer to the written objections of General Steinmetz, who disapproved of this retirement, Moltke wrote:—

"An isolated advance of the First Army against the enemy, who appears to be in full strength and closely concentrated, could only lead to defeat.

"The co-operation of all three Armies can only be directed by His Majesty. And in the execution of his orders the Army commanders will not be hampered, but will be left fully at liberty to act according to circumstances."

It is undeniable that in 1870 Moltke held the reins of the control of the Army far more tightly. It is possible that he had in view the danger to which the Second Army had exposed itself in 1866. In 1870 he no longer left it to the insight of the Army commanders to strike when they considered the moment favourable; he did not confine himself, as in 1866, to merely dissuading them from premature action, but he issued orders to prevent the premature encounter of Steinmetz's Army with the superior French forces. And yet the situation of the Prussian First Army in 1870 was not so critical as that of the Second Army in 1866.

* Not reproduced.

This instance, in 1870, is the only occasion on which Moltke put into practice the manœuvre which, as we have seen, he so constantly practised at his staff tours, and which he had projected in many plans prepared for war, namely, the withdrawal of an advanced force to save it from defeat. It was on this account that Moltke, in the first days of August, 1870, withdrew the First Army and shifted the detraining station of the Second Army some 60 miles to the rear.

And this is perhaps the most important lesson to be learnt from the mass of interesting matter contained in Moltke's General Staff tours :

To concentrate all available forces for the battle and to avoid defeat in detail.

This is a natural law, familiar to all; and yet it is the one which has been the most frequently broken in the history of warfare. From Ulm in 1805 to the Yalu in 1905, in almost every campaign the commanders were led astray into pushing forward portions of their forces against an enemy already concentrated in superior strength.

Moltke knew, better than any other man, the truth of General Clausewitz's saying : "There is no higher and simpler law of strategy than to keep one's forces together." And he also knew how difficult it is to carry out this simple precept, amid the uncertainty produced by the impressions of war. Therefore he practised this difficult task almost every year.

In the foregoing pages I have merely endeavoured to show what an inexhaustible field of instruction Moltke's military work presents, especially when studied as a whole.

The published series of the General Staff tours directed by Moltke concludes with the year 1869. All such tours directed by the great strategist since the campaign of 1870-71 have been kept secret as regards their object and their conduct. The intimate connection with actual preparations for war, which is evident from the study of his published tours, explains the reason why his later tours, which were presumably similar in character, have not been published. Moltke's views upon the altered conditions governing a campaign against France, due to the great development of the French system of fortifications since 1870, have not been divulged, and the same applies to his projects for a war against Russia, whose military strength increased to a remarkable extent in the "eighties." It is hardly to be doubted that Moltke handled schemes relating to these Powers in his tours of the "seventies" and "eighties."

It is probable that at the present day the German war projects are based upon Moltke's plans. And this may be taken as the principal reason why no details of the tours directed by Moltke since 1869 have been published.

While recognizing this fact, foreign officers may thank the Prussian General Staff for throwing open at least a part of this rich mine of military instruction to them.

RAILWAY NOTES ON THE MANŒUVRES IN THE EASTERN COUNTIES—Autumn, 1912.

(Reprinted by permission from the *L. & N.W.R. Gazette*, January and March, 1913).

I. By J. F. BRADFORD.

THE War Office decided that during these Manœuvres an entirely new experiment should be inaugurated in dealing with the supply of food, stores, etc., required by the troops engaged at the "front," *viz.*, that the whole of the "supplies" necessary for the men and horses forming the "Blue" Army should be collected and stored at a suitable dépôt, termed the "Advance Base Supply Dépôt," and thence despatched daily according to requirements, by special goods train to such point or points as the situation or position of the troops demanded.

The stores on arrival at the "railhead" (the name given to the "receiving" station) were to be unloaded from the trucks by "Blue" Army men under the direction of an Officer and men who would accompany the train from the station to be used as a "supply dépôt," reloaded into road motor lorries, and then transported by various roads leading from the station selected as the "railhead" to the actual places where the Army was engaged, and food and stores were required.

Early in June, Colonel P. E. F. Hobbs, C.M.G., late A.D. of S. & T. Eastern Command, visited Euston Station and confided these plans to those few London and North Western Railway officers whose co-operation was absolutely necessary, and a tour of inspection was arranged to decide upon a suitable station to equip and use as an advanced base supply dépôt.

There were many details to be borne in mind in selecting the same, *viz.* :—

- (1) The position had to be of sufficient distance from the scene of the fighting to avoid the possibility of capture by the "Red" Army, involving loss of stores.
- (2) Good rail facilities for ensuring a rapid transit to the road distributing station or stations.
- (3) Sufficient siding accommodation at the station to deal with the incoming loads, the outgoing loads, and also the necessary empty wagons.
- (4) A suitable field easily accessible either by rail or by road.
- (5) Space for storing "petrol" a sufficient distance from the stores, etc.
- (6) Good water supply for drinking, cooking, and baking purposes, also for washing, etc.

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- (4) A suitable field easily accessible either by rail or by road.
- (5) Space for storing "petrol" a sufficient distance from the stores, etc.
- (6) Good water supply for drinking, cooking, and baking purposes, also for washing, etc.

Various stations and places were inspected, and after careful consideration it was found that the facilities existing in the vicinity of Althorp Park Station were the most satisfactory. Althorp Park is ordinarily a quiet little country station, situated six miles from Northampton on the Northampton and Rugby Line, but, in connection with this experiment, was destined to become suddenly a most important centre of activity.

Details of the arrangements necessary were submitted to the officers representing the departments of the Company affected, and the work taken in hand immediately.

Arrangements were also made by the War Office to hire a field adjoining the north end of the goods yard.

A temporary siding was laid into the field, also a wooden platform constructed to expedite the loading and unloading, the engineering details and requirements of the War Office being arranged and carried out under the supervision of Mr. W. B. Farr, the Divisional Engineer at Northampton.

It was obvious that with instructions from Headquarters at Bedford arriving late in the afternoon or evening, relating to food and stores required to be despatched early the following morning, night working would have to be resorted to, and it was therefore necessary to provide efficient lighting facilities to enable this to be done. "Auto Lux" oil "vapour" lamps were fixed in suitable positions on high standards and gave every satisfaction.

The actual work of dealing with the stores at Althorp Park was performed by the Army Service Corps, consisting of eight officers and about 150 men, under the command of Major H. F. Brooke, A.S.C., who took up their quarters at Althorp Park on September 4th.

Some stores were purchased locally for the use of the dépôt establishment, but the bulk, consisting of flour, oats, hay, tea, biscuits, meat, firewood, petrol, etc., etc., was received in railway wagons from various points, *viz.*, London Docks, Aldershot, Woolwich, Chatham, Odham, etc.

The first wagon arrived on September 5th, and the total tonnage dealt with was 885 tons inwards, and 874 tons outwards. The goods yard was cleared of its ordinary wagons, and the trucks of stores on arrival were placed first of all in the L. & N. W. sidings, being subsequently shunted on to the dépôt siding as required. The contents were then unloaded and carefully checked and stored under tents, or tarpaulins. Field ovens were constructed on the principle of the old-fashioned baking ovens, *viz.*, to be first heated with wood burnt in the oven itself. Under the supervision of a "Master Baker" a very large quantity of most appetizing bread was turned out (approximately 10,000 to 12,000 2-lb. loaves *per diem*).

The instructions as to requirements of the various brigades and divisions were telephoned from Headquarters to Major

Brooke, the loading was proceeded with, and the outwards wagons, when completed, had then to be specially marshalled according to the destinations of the various sections of the train.

A special shunting engine was employed on War Office account for a total of 72 hours, making various movements, berthing wagons, and placing them in a position for unloading or loading.

The War Office notified the General Manager that the "railhead" stations would probably all be in West Cambridgeshire, either on the L. & N. W., Midland, or G. N. Lines. With a view of expediting the transit, both of the loaded trains and also the empty wagons back again, a working arrangement was specially agreed between the L. & N. W. and Midland Companies, *viz.*, that the supply trains should work via Northampton, practically direct to Bedford or Hitchin (the latter station being the Midland Junction with the G. N. Line), and be worked throughout on the outward journey to Hitchin by L. & N. W. engines and men, the Midland Company, of course, providing pilotmen from Northampton.

Mr. G. N. Ford, District Superintendent, Euston, and Mr. A. Boyce, District Goods Manager, Rugby, in whose Districts Althorp Park Station is situated, were responsible generally for the arrangements in connection with the working. Mr. J. B. Bayley, the District Superintendent at Northampton, also co-operated and supervised the Traffic Department arrangements at Northampton, and the transfer of the trains to the Midland Line there. Mr. Ford appointed Mr. H. W. Perkins to be stationed at Althorp Park throughout the period, *viz.*, from September 9th to September 19th, inclusive, to deal with the details and see that the arrangements laid down and the instructions issued from Army Headquarters at Bedford, and from Major Brooke on the ground, were carried out.

When all the arrangements and details had been agreed and completed, and in view of the fact that the Supply Depôt was situated on the L. & N. W. Line, the War Office asked that a L. and N. W. Officer should be attached to the Staff of Major-General Ruck, C.B., the Inspector-General of Communications, whose Headquarters were at Bedford, in order to be on the spot to deal with and settle details and alterations as they arose, and issue instructions to all concerned.

The writer was instructed by Mr. R. Turnbull to take up this duty, and was attached to the Headquarters Staff, at Bedford, from Friday, September 13th, to Thursday, September 19th, inclusive.

It was necessary before proceeding to Bedford, to consult the Superintendents of the Midland and Great Northern Railways, who were personally interviewed. They kindly promised the fullest possible co-operation, and Inspector Gibbons, Midland Railway, Bedford, and Inspector King, G. N. Railway,

Hitchin, were appointed respectively to act as representatives of the two Companies and carry out the requirements of the War Office.

The actual destinations being liable to be frequently changed necessitated the railway officer at Headquarters keeping in very close touch with the Army officers, and in turn with the various railway representatives who had to carry out the instructions. The Headquarters Office was provided with direct telephonic communication with the dépôt at Althorp Park, and, through the Post Office exchanges, with London and the various officers at the front; also to the stations used as "rail-heads," and these facilities were of the greatest possible assistance in arranging the details in connection with the special train, etc.

The experiment was in operation for four days, *viz.*, September 15th, 16th, 17th and 18th. Four special trains were run between Althorp Park, L. & N. W., and Bedford, Mid., conveying a total of 121 wagons, an average load per train of 30 wagons, and specials were also arranged forward as required from Bedford to Hitchin, Mid., and Ampthill, Mid., and in one instance to Royston, G. N.

The timing and arrangements quoted to the Inspector-General of Communications were worked to and carried out without any hitch arising, and the attention and ready help given by the railway staff of the three Companies was much appreciated by General Ruck and his officers.

There was one particularly smart move carried out by Inspector King, the G.N. Railway representative, at Hitchin, which I think is deserving of special mention. During the evening and night of Wednesday, September 18th, the actual whereabouts of the "Blue" Divisional Cavalry could not be located. At about 4.0 a.m. on Thursday morning the officer in charge of the Cavalry Supply Column motor lorries was instructed to off-load the supplies at Saffron Waldron, near where the cavalry were known to be.

The motor-lorries having travelled a considerable extra mileage were at the moment short of petrol, and had not sufficient to work them back empty to the railhead station, "Hitchin, Midland." In order to reduce the road mileage, it was decided to move the supplies from Hitchin to Royston Goods Yard, G. N. R., about 16 miles away. Instructions were telephoned to Inspector King, at Hitchin, at 5.30 a.m., and the wagons with supplies were moved from the Midland Yard and actually berthed in Royston, G.N. Goods Yard, at 7.5 a.m.

To close my sketch, I should like to mention one further interesting detail, which illustrates the kind of work that had to be carried out by the writer when attached to Headquarters Staff at Bedford.

On the morning of September 17th, Major-General Ruck decided, to avoid the possibility of "capture," it would probably be necessary to move his Headquarters, and the Reserve supplies standing at Bedford station to Hertford. Hertford was then inspected by Major Fuller, R.E., and myself, the G. N. Station Master (Mr. Beavis) advised and consulted, and at 7.0 p.m. the General ordered that all must be kept in readiness to move at a moment's notice. The Midland representative was communicated with by telephone, and he arranged to keep an engine standing in steam, prepared to leave for Hertford, G. N., immediately the order was given. At 11.45 p.m. Major-General Ruck received further telegrams and information from the "Blue" Army Headquarters at the front, and decided not to move, at any rate before the morning, and the arrangements were cancelled.

II. By W. E. BRADBURY.

IN connection with the Army Manœuvres in East Anglia in September last the London and North Western Company was called upon to take a very active part in moving troops and their impedimenta to and from the manœuvre area, and as the traffic had to be dealt with at stations on the Cambridge Branch, where the accommodation is extremely limited, the task was not entered upon with very light hearts by those who were to be responsible for the working. At the onset it was quickly appreciated that the movement would be the biggest of its kind ever undertaken by the North Western, and that exceptional efforts would be required if the prestige of that Company was to be maintained.

The War Office officials visited the stations between Bedford and Cambridge and selected Potton for detraining the inwards traffic, and Cambridge Goods Yard for entraining the outward, and at both these places loading docks were provided, the temporary accommodation at each place consisting of a main dock, 200 ft. in length, and two end-on docks. The main dock was for dealing with the horses, both in horse boxes and cattle wagons, and at the end-on docks guns and limbers, ammunition wagons, carts, etc., were dealt with.

The troops detrained at Potton formed part of the "Blue" or defending army, and were all brought from Salisbury Plain, where they had been taking part in some preliminary manœuvres. They were loaded at Tidworth, Ludgershall, and Amesbury, the special trains conveying them running via the Great Western system, and being handed to the L. & N. W. Company at Oxford.

The War Office divided the inwards and outwards working between two of its officers, Major Fuller being responsible for the inwards arrangements, and Major Lubbock for the

outwards. These officers in turn submitted their requirements to the interested railway companies, and deputed the London and North Western Company to confer with the other companies, divide the troops, horses, guns, etc., into train loads, and submit complete proposals and time tables to the War Office, stipulating that the trains should, as far as possible, be unloaded at Potton, on an average of one in every 40 minutes.

The inwards traffic, as given by the War Office, consisted of :—

- 387 officers.
- 7,896 men.
- 248 horses in horse boxes.
- 1,706 horses in cattle wagons.
- 40 guns and limbers.
- 40 ammunition wagons.
- 251 4-wheeled wagons.
- 84 2-wheeled carts.
- 124 cycles.

Loaded in 44 trains consisting of :—

- 21 saloons and 1st class carriages.
- 26 composite.
- 168 3rd class carriages.
- 96 horse boxes.
- 242 cattle wagons.
- 368 carriage trucks.
- 75 break vans.

The first train was timed to arrive at Potton at 7.0 a.m. on Sunday, September 15th, and the last at 6.35 p.m. on Monday, September 16th, making practically 36 hours continuous work.

The arranging of the time table was found to be no sinecure as (1) there was no room at Potton to hold any of the empty vehicles; (2) practically all the empty trains had to be returned in the Bletchley direction; and (3) last, but by no means the least, all the trains, loaded and empty, had to pass over the single line between Bedford and Sandy, a distance of just over eight-and-a-half miles. Of the two staff stations on the single line, Willington only could be used for crossing the troop trains, and as the clearance here was only 831 feet, and some of the troop trains were over 880 feet in length (exclusive of the engine), the difficulty was intensified. The length of the engine was considered as 46 feet.

The method of dealing with the trains on arrival at Potton Station had also to receive careful thought, as with the number of shunts necessary to place the vehicles in position in the yard for unloading, and again for re-marshalling the empty trains for return, it was apparent that unless the most methodical

principle was adopted and adhered to, the probability of the empty train leaving Potton within 40 minutes of its arrival loaded was most remote, more particularly as no material shunt could be made without fouling the up main line.

The Working Notice was in the hands of the staff two clear days before the first train was due to reach Oxford, and was found to contain at least two unique features. The usual information as to particulars of the unit conveyed, marshalling of the train, timing, destination of the empty train, special instructions, etc., were of course the main features; but for the guidance of the regulators over the single line the approximate length of each train was given; and in addition to this—and what ultimately proved of the greatest assistance in the working, a diagram of Potton was bound in each notice. This diagram showed in the text the operations that would be made at Potton in dealing with the loaded, and marshalling the empty trains, and consequently the drivers and breaksmen arrived at the station with a knowledge of the movements which they would be required to make, and the work was considerably facilitated thereby.

It was considered desirable that the headquarters staff responsible for the working of the traffic, should be always at hand during the manœuvre period, ready for any emergency, and to enable this to be done a dining car, two sleeping saloons, and a picnic saloon (to act as the Company's office) were sent to Potton and from thence to Cambridge; and the officers left Euston on Saturday, September 14th, to take up their temporary quarters.

Shortly after 4.30 a.m. on Sunday, September 15th, the writer was out of his berth and at the window to ascertain the weather conditions. The daybreak was glorious, and conveyed no hint that in a few hours the peaceful conditions of the little village and its surroundings would be overrun by all the paraphernalia of war, and almost before he could turn round a voice at the door told him that "No. 1 train left Oxford at 4.14 a.m., 16 minutes before time," and all were now eager for the train to arrive at Potton and put our arrangements to the test.

The agreed marshalling of the trains on arrival at destination was :—

Engine,
Break van,
Passenger vehicles,
Horse boxes,
Cattle wagons,
Open carriage trucks,
Break van,

and it is to the credit of the entraining companies that no deviation from this marshalling was made.

No. 1 train arrived Potton No. 2 Box at 6.34 a.m., and in trepidation we waited the course of events. There was, however, no cause for fear; the men were in their set positions with their allotted parts to play, and the arrival of the first train so much before time put them on their mettle. At 6.37 a.m., three minutes after the arrival, the couplings between the passenger vehicles and the horse boxes had been undone, and the front part of the train was steaming ahead clear of the cross-over road to back into its place in the goods yard. Immediately this portion was clear of the points, a second engine came out of the lay-by siding and backed on to the remainder of the train, and drew this (minus the rear break van) forward and backed the whole on to the end-on dock, where the couplings were detached between the cattle wagons and the carriage trucks, and the horse boxes and cattle wagons drawn forward and placed on either side of the main dock. In the meantime the rear break van was taken off the down main line and placed in position to form the leading vehicle of the empty train from Potton to Bletchley. The duties of the men at the end-on dock were divided. One gang immediately boarded the carriage trucks and undid the lashings, while the second gang was responsible for placing the "runners" or loading boards in position across the ends of the trucks, so as to make an unbroken run through the whole length of the trucks to the dock.

The first empty train left Potton for Oxford at 7.17 a.m., 18 minutes before time, and 43 minutes after its actual arrival, and with our first experience we were satisfied that, given normal conditions, we could easily overcome the task before us.

During the whole of Sunday, Sunday night, and Monday, the trains continued to arrive, were unloaded, and the empty trains despatched, the last loaded train reaching Potton at 6.33 p.m. on Monday, September 16th—or two minutes before time.

To facilitate the working on the ground, special lists were issued showing only—

- The number of the train,
- Time due Potton,
- Particulars of the unit,
- Composition of the train,
- Time the empty train was to leave,
- Destination of the empty train,

and these lists, being in a more handy form than the complete Working Notice, were greatly in demand by the staff. To distinguish them from the other notices, they were printed on pink paper, and early on Sunday morning had gained the title of the "Pink 'un."

Of the 44 empty trains the first 16 were returned to the G. W. Company via Oxford for second loading, and the

remaining 28 had to go into Bletchley, Wolverton, etc., to be remarshalled for the return journey.

On Tuesday morning the temporary office, etc., accommodation was removed from Potton to Cambridge to prepare for the return of the troops from the latter place, and it was very gratifying to receive almost immediately on our arrival at Cambridge the following copy of a telegram addressed to the General Manager by the Officer commanding the Blue Force :

"The Commander-in-Chief, Blue Force, desires to convey to you his great appreciation of the remarkable and efficient and punctual manner in which the move of the above Army to the area of operations has been carried out. There was absolutely no hitch in the arrangements."

So far as I can gather the L. & N. W. was the only Company to receive a congratulatory telegram of this description.

Now came the question of remarshalling the whole of the vehicles, and providing additional stock to meet the return requirements. Major Lubbock had already submitted details of the anticipated movements of the units, and the information had been got in type in notice form, ready to go to press on obtaining his confirmation. The programme provided that 50 trains would be required, the first to leave Cambridge at 9.0 p.m. on Thursday, September 19th, and the last at 7.15 p.m. on Sunday, September 22nd. Of this number 35 were to start from Cambridge, six from Potton, and nine from Biggleswade, G. N., via Sandy.

A special staff was provided at Bletchley to form the return trains, and preliminary lists had been supplied them.

At 11.30 a.m. on Tuesday, September 17th, Major Lubbock called at the office to say that none of the troops would return before Friday, September 20th, and he required alternative schemes (1) for the first train to leave at 6.0 a.m., and (2) for it to leave at 11.0 a.m. on that day. The two schemes were worked up and the Notice sent from Cambridge by special messenger by the 9.44 p.m. train to the printers in London. At 10.30 p.m. Major Lubbock called again to say the arrangements were again altered, and that the first train would leave at 10 p.m. on the Thursday. This left us less than 48 hours to get out and issue the necessary instructions; but thanks to the Time Table Staff (who worked all night on the fresh Working Notice), and also to the printers, who seem always able to meet us in emergencies, both the Notice and the Marshalling Sheets were printed and issued in good time.

The arrangements for loading the traffic at Cambridge were carried out on the same lines as the unloading at Potton, and everything worked most smoothly and punctually.

A large staff of horse and carriage loaders, as well as loco., permanent way, carriage department, etc., men, were at both

places, and with their usual kindly thought for the welfare of the staff, the Company had made every arrangement for their feeding, etc., and the catering left nothing to be desired.

The total traffic dealt with over the London and North Western Line in connection with the manœuvres was :—

		No. of Spcls.	No. of Vehcls.
To Hitchin	...	10	245
At Potton (Inwards)	...	44	956
At Cambridge	...	35	788
At Potton (Outwards)	...	6	139
At Bedford	...	1	12
At Old North Road	...	5	75
From Hitchin	...	9	225
Via Hampstead Jc. Line	...	99	2,367
		209	4,807

As in every case the empty train travelled in the opposite direction, these numbers may be doubled to get the actual figures.

The G. W., L. & S. W., G. N., and G. E. Companies had their share of the traffic, and it is greatly due to the punctual working of the trains off the systems of the first three Companies mentioned that our result in the unloading was so good.

NAVAL AND MILITARY CALENDAR.

JULY, 1913.

2nd (Wed.) Naval visit of French Minister of Marine.
 3rd (Thurs.) Repulse of Bulgarians on Bregalnitza and Lower Vardar.
 " " Mobilization of Rumanian Army.
 5th (Sat.) Royal Review of London Territorial Force.
 7th (Mon.) Launch of t.b.d. "Owl" from the Govan Yard of the London & Glasgow Engineering & Iron Shipbuilding Co., for the British Navy.
 14th (Mon.) Opening of the Bisley Meeting.
 17th (Thurs.) German Army Airship "Schütte-Lanz I" wrecked near Schneidemühl.
 22nd (Tues.) Re-occupation of Adrianople by Turkey
 25th (Fri.) Centenary of beginning of the Battles of the Pyrenees, 1813.
 30th (Wed.) Balkan War: Armistice concluded at Bukarest.

NAVAL NOTES.

BRITISH EMPIRE.

THE NAVAL MOBILIZATION.—The completion of ships in the Second and Third Fleets to full complement for the naval manœuvres took place on July 15. The operation was completed with ease and expedition, in spite of the large numbers of officers and men required to raise the crews to full strength. In the Second Fleet, the battleships affected were those of the 5th and 6th Battle Squadrons, numbering eight and five vessels respectively, and the 5th Cruiser Squadron, composed of the "Carnarvon" and "Lancaster," with the light cruisers "Bristol" and "Liverpool." In the Third Fleet, no battleships were mobilized, but there were four cruiser squadrons, the 6th, 7th, 9th and 10th. The torpedo flotillas concerned were the four under the direction of the Admiral of Patrols, and there were several auxiliary ships which had their complements strengthened. The three new "Light Cruiser Squadrons"—two for permanent service in the First and Second Fleets and one for temporary service during the manœuvres—were also constituted.

As regards the distribution of the mobilized ships, the battleships "Bulwark," "Irresistible," "Prince of Wales," and "Venerable" (5th Battle Squadron), and the "Albemarle," "Duncan," and "Glory" (6th Battle Squadron) embarked their balance crews at Portsmouth, where there were also completed the cruisers "Good Hope," "King Alfred," and "Drake" (6th Cruiser Squadron), "Ariadne," "Diadem," "Europa," and "Spartiate" (9th Cruiser Squadron), and the light cruisers "Liverpool," "Topaze," "Sentinel," and "Skirmisher." At Devonport, the only battleship completed was the "Exmouth," besides which there were the cruisers "Carnarvon" and "Lancaster," and the light cruisers "Bristol," "Sapphire," "Adventure," and "Attentive." At the Nore, the battleships "Formidable," "Implacable," "London," and "Queen" were raised to full complement for the 5th Battle Squadron, and the "Vengeance" for the 6th Battle Squadron. The cruisers were the "Aboukir," "Bacchante," "Cressy," and "Sutlej," of the 7th Cruiser Squadron, and the light cruisers "Forward" and "Foresight." The cruisers of the 10th (Training) Squadron proceeded to Pembroke from Queenstown instead of dispersing to their base ports to receive officers and men.

On embarking their balance crews, the ships left for their appointed rendezvous to await the opening of the manœuvres, there being a week for preliminary exercises between the day of mobilization and the beginning of the actual operations. The Secretary of the Admiralty announced

on July 10 the division of the ships between the two manœuvre fleets, of which Blue had 230 ships and Red 117, was as follows:—

<i>Blue.</i>	<i>Red.</i>
One fleet flagship.	One fleet flagship.
1st, 3rd, and 5th Battle Squadrons.	2nd, 4th, and 6th Battle Squadrons.
“Lion,” “Princess Royal,” and “Indefatigable,” battle cruisers.	“Indomitable” and “Invincible,” battle cruisers.
2nd, 3rd, 4th, 5th, 6th, 7th, 9th, and 10th Cruiser Squadrons.	1st Cruiser Squadron, with “Cornwall,” “Cumberland,” and “Warrior.”
1st and 3rd Light Cruiser Squadrons.	2nd Light Cruiser Squadron.
Minelaying Squadron.	2nd, 3rd, and 6th Destroyer Flotillas.
1st, 4th, 7th, 8th and 9th Destroyer Flotillas.	4th and 8th Submarine Flotillas.
3rd, 5th, 6th, and 7th Submarine Flotillas.	

The Red Fleet was ordered to be based on the ports on the east coast from Dover to Yarmouth inclusive, and its ships began to assemble at the Nore on July 15. The remainder of the coasts of the British Isles was allotted to the Blue Fleet.

An important feature of the naval manœuvres was the co-operation of a military force lent by the Army Council for the purpose of an attempted raid on the territory of the defending force. This military contingent consisted of the 1st Battalion Royal Fusiliers, the 1st Battalion Royal Welsh Fusiliers, and the 1st Battalion Gloucestershire Regiment, stationed at Kinsale, Portland and Portsmouth respectively, and the three battalions were embarked in transports which were attached to the Red Fleet. A fourth battalion was composed of Royal Marines, the total raiding force numbering about 3,000 officers and men.

The manœuvres began on July 22, and their precise duration was to be dependent on the course of events. They ended on the 28th.

LIQUID FUEL FOR THE FLEET.—The speech of the First Lord of the Admiralty in the House of Commons on July 17, upon the discussion of the Shipbuilding Vote of the Navy Estimates, was mainly devoted to the question of the use and supply of liquid fuel for the Fleet. He said that there was plenty of oil in the world and that the processes for manufacturing it were numerous and increasing, while the most promising feature of recent investigations was the great potentiality of the home supply. In order that in future the Admiralty might be in a position to obtain a steady supply without fluctuations of price, the Department had an ultimate and an interim policy. The ultimate policy was to become the independent owner and producer of its own supplies, by building up an oil reserve in this country sufficient to make us safe in war and able to override price fluctuations in peace, and by acquiring the power to deal in crude oils as they came cheaply into the market. It was also necessary that the Admiralty should become the owner or the controller at the source of at least a proportion of the supply of natural oil required. Last year, 50,000,000 tons of crude oil were produced, and the British Navy consumed no more than 200,000 tons. The policy of the Admiralty was to draw supplies from sources as varied as possible, and over the sea routes which could most easily be defended. Dealing with the advantages of oil over coal, Mr. Churchill said that there was no doubt

that with otherwise similar ships, the one burning oil possessed a large excess of speed over the one burning coal, and even over the one burning coal and oil. The radius of action was increased by nearly 40 per cent. for the same weight of fuel. Oil could be stowed in places aboard ship from which it would be impracticable to bring coal to the furnace, this again adding to the radius of action. Oil bunkers could be replenished with great rapidity and without interference with the fighting efficiency of the ship, few men sufficing for the work. A very large reduction of the stokehold personnel was possible with oil, compared to the large amount of labour involved in coal-trimming, stoking, removing ashes, clinkers, and soot, etc. Oil enabled the variations of steam pressure due to the necessity for cleaning coal-burning furnaces to be eliminated. With oil, it was possible to obtain vessels of very high speed compared with their dimensions which would be impossible if coal was the only fuel. A special advantage which oil conferred on the British Fleet, and which would not be enjoyed by any weaker Naval Power, was that of not being forced to leave its fighting position in order to re-fuel. Proceeding to deal with the application of these advantages to the construction programme, the First Lord stated that it was decided to make the four battleships of 1912-13 to burn oil fuel only, as well as the eight light cruisers. These vessels could not have been satisfactorily constructed on a coal-burning basis. The battleships would not have had the speed required, without adding to their length and cost and raising the docking problem in a most formidable shape. The light cruisers would either have had to be increased in length and displacement, making them too expensive for the numbers required, or they would have lost from three to four knots in speed, making them unfit for the tactical duties required. The five battleships of 1913-14 were, however, to be coal-burners, as they were to have the ordinary speed of the line of battle of 20 or 21 knots, which could be effectively realized with coal, and not the exceptional speed of the fast division of the previous year. Dealing with the question that oil supplies would be declared contraband in war time, Mr. Churchill said the effect of this would be very small, if the reserves are maintained in peace, and as long as the British command of the sea, on which all else depends, is effectively maintained.

NEW CONSTRUCTION PROGRESS.—The First Lord dealt in his speech on July 17 with the remarkable accession of strength to the Fleet which is being made now and in the next few months. "What with the arrears of shipbuilding which are being worked off and the new ships which are approaching completion, and the general activity which is being maintained," he said, "we shall receive in the near future incomparably the greatest delivery of warships ever recorded in the history of the British Navy. According to the latest figures supplied me at the beginning of this month, we are due to receive a torpedo boat destroyer on the average once a week for the next nine months, besides a very large delivery of submarines. During the next 12 months we shall receive on the average a light cruiser every 30 days, and during the next 18 months we shall, on the average, receive a super-Dreadnought of the latest possible type and of the highest possible cost every 45 days. Full crews will be available for all this Fleet as it is completed without laying up any serviceable vessels of real value." The actual vessels referred to by Mr. Churchill belong to three programmes, those of the financial years 1910-11, 1911-12, and 1912-13. The destroyers include some of the 20 of the "Acasta" group, of 1911-12, of which nine had been completed up to

the end of June, leaving 11 in hand; and the 20 of the "Florizel" class, of 1912-13, a total of 31 boats to be delivered within nine months. This was made possible when the Admiralty, in February, 1912, decided, in view of the acceleration of the destroyer programme of a Continental Power, to invite tenders at once for 20 new destroyers of the 1912-13 programme, which would not otherwise have been done until the summer. The light cruisers to be delivered within the next 12 months are the "Birmingham," "Nottingham," and "Lowestoft," of the "City" type; the "Fearless," of the unarmoured type; and the eight of the "Arethusa" class of light armoured cruisers. This works out, as Mr. Churchill said, at one cruiser every 30 days. The battleships and battle cruisers to join the fleet are the "Ajax," "Audacious," and "Queen Mary," of the 1910-11 programme, which should have been ready by March last; the "Iron Duke," "Marlborough," "Benbow," "Delhi," and "Tiger," of the 1911-12 programme, to be completed by March, 1914; and the "Queen Elizabeth," "Warspite," "Valiant," and "Barham," which the First Lord also calculates to be ready "during the next 18 months," or by January, 1915. This gives a total of 12 armoured ships to be delivered for the use of the British Navy in the period mentioned by the First Lord.

ARGENTINA.

THE NEW DREADNOUGHTS.—The "Moreno" and "Rivadavia," the two Dreadnoughts laid down in the United States in the middle of 1910, are not yet completed, but the Argentine Government is not disposed to transfer them to another Power. Reports that Turkey had agreed to purchase the vessels were officially denied, although it was admitted that the Porte had made overtures in this direction. The "Moreno" and "Rivadavia" were launched in 1911, and are already overdue, but in June all the 12-inch guns were not mounted. Twelve guns of this calibre are mounted in each ship, in twin turrets, all firing on either broadside, in addition to 6-inch and 4-inch guns. Eighty rounds for each of the 12-inch guns and 300 for each of the 6-inch guns will be carried. The personnel of the Argentine Navy has been increased by 2,000 in view of the completion of these ships and of the new destroyer flotilla.

AUSTRIA-HUNGARY.

THE SECOND DREADNOUGHT DIVISION.—It seems probable that the design of the second Dreadnought division of the Austro-Hungarian Navy, the construction of which is being put in hand this year, will resemble the British "Queen Elizabeth" type in certain particulars. It is at least certain that a more powerful armament than the twelve 12-inch guns of the "Viribus Unitis" class will be mounted, for the Skodawerke at Pilsen, the source of supply for Austrian naval ordnance, had completed some 13.5-inch guns 12 months ago. These weapons may be found to have been installed in the fourth unit of the first division, the "Szent Istvan." For the second division, a 15-inch gun armament has been spoken of, and the increase of calibre appears to be favourably regarded in view of the disappointing results of the triple turrets, with which the "Viribus Unitis" class are fitted.

THE "TEGETTHOFF'S" COMPLETION.—A message to the *Zeit* on July 13 announced that the second Dreadnought, the "Tegetthoff," had been

ordered to be commissioned. The keel of the ship was laid on September 24, 1910, and while the building period has been greater than that of the first battleship, it is less than the three years forecasted by Admiral Count Montecuccoli at the time the programme was voted. The "Viribus Unitis" occupied two years, three months, from the date of laying down to the date of commissioning; the "Tegetthoff" has occupied, up to the time of writing, two years, ten months. Both ships have been constructed at the Stabilimento Tecnico at Trieste, with guns and armour from the Skodawerke at Pilsen and the Witkowitz steel works in Moravia, where the necessary developments of plant for dealing with vessels nearly 50 per cent. larger than their immediate predecessors were carried through in time to prevent any delay with the new ships.

CHILE.

NEW DESTROYERS.—Of the six powerful torpedo-boat destroyers building for the Chilean Navy by Messrs. J. S. White & Co., of East Cowes, the first has been tried with successful results. The contract for this flotilla was signed on September 25, 1911, and provided for vessels of 1,500 tons displacement, engines of 27,000 shaft horse-power, and 31 knots speed, with an armament of six 4-inch guns and three torpedo tubes. The vessels are named after Admirals Lynch, Condell, Simpson, Goni, Robollo and Riveros. The "Almirante Lynch" was launched on September 28, 1912, and proceeded on trial in the first week of July. On the measured mile at Skelmorlie, the designed horse-power was exceeded, and both on the full-power trial and on the six runs over the measured mile the designed speed was attained. The mean speed on the measured mile was 31.7 knots; that on the six hours' continuous trial 31.85 knots.

FRANCE.

M. BAUDIN'S VISIT TO MR. CHURCHILL.—In the first week of July, M. Baudin, the French Minister of Marine, paid a private visit to Mr. Churchill and to the British fleet in the Channel, in return for the visit of Mr. Churchill to Toulon in March last. M. Baudin crossed to Dover by mail steamer on July 2, and joined the First Lord in the "Enchantress," the cruiser "Roxburgh" saluting as he went on board the yacht, which afterwards left for Portland. Here, three battle and two cruiser squadrons of the First Fleet, and several destroyers were present, under the command of Admiral Sir George Callaghan, and the vessels put to sea for tactical exercises, which the French and British Ministers witnessed from the "Enchantress." Subsequently, Mr. Churchill and his guest went on board the battleship "Orion," which carried out target practice with her 13.5-inch guns. About 30 rounds were fired at a target towed by the cruiser "Argyll" at a range of about 8,000 yards, but owing to mist it was impossible to do as much firing as was intended. A dinner party to M. Baudin and the flag officers was given in the "Enchantress" by Mr. Churchill, and on July 4 the French Minister, after taking leave of the British First Lord at Portsmouth, was conveyed to Havre in the yacht. He was accompanied throughout the visit by Vice-Admiral Le Bris, Chief of the Naval Staff. Speaking to a representative of Dalziel's Agency on his return, M. Baudin said his visit was only a commencement, that in the future the exchange of such courtesies between the two Navies would be more frequent, and that an early meeting was anticipated between

officers of the headquarters staffs, notably between Admiral Bris and Prince Louis of Battenberg.

THE BATTLESHIP "COURBET."—The following particulars relating to the design of the new battleship in which M. Poincaré travelled to England on his recent visit are quoted from an article in *Engineering* :—

"There is a striking similarity in the dimensions of the "Courbet" and the "Orion." The former is 546 feet long by 88½ feet beam, while the British ship is 545 feet long by 88½ feet beam; but the draught for the French ship is given as 29 feet for a displacement of 23,100 tons, with 900 tons of fuel on board, and for the British ship as 27½ feet for a displacement of 22,500 tons with the same weight of fuel on board. The French ship's Normand boilers and Parsons turbines are designed for 28,000 horse-power; the Orion's Babcock and Wilcox boilers and Parsons turbines for 29,000 horse-power, the corresponding speeds being 20 and 21 knots respectively. The important difference has reference to the armament. In the "Orion" the British Admiralty stepped up from the 12-inch gun for the primary armament to the 13.5-inch weapon. The French still relied on the 12-inch guns; but whereas the "Orion" mounts ten primary guns, all in centrally situated barbettes, in order that all may fire on either beam, the French authorities fitted twelve 12-inch guns in six barbettes. Two of these barbettes are forward and two aft, while one is placed amidships on each side. The guns in the two turrets forward are mounted at different elevations, as is also the case with the two pairs aft. In this way there are available eight 12-inch guns to fire ahead in line with the keel, including the two pairs of guns amidships on each side, and eight to fire aft, with ten for broadside fire. In the "Orion" the same arrangement of guns at different elevations was introduced forward and aft, but there is only one central barbette, the two guns of which have a wide arc of training on each beam. A striking feature of the "Courbet" is the power of the armament for repelling torpedo attack. Thus while the "Orion" was fitted with sixteen 4-inch guns, the "Courbet" has twenty-two 5.5-inch guns, in addition to four 3-pounder guns. She has thus a very considerable advantage in this respect. Moreover, she has four submarine torpedo tubes, whereas the "Orion" and the other seven ships of the same class have only three. The 5.5-inch guns are grouped in a somewhat interesting way. They are placed on the main deck in four batteries on each side. Forward alongside the main barbettes there are grouped on each side three of the guns. Amidships, forward of the main barbette, on the port and starboard sides are three 5.5-inch guns similarly disposed, and firing ahead, with a considerable arc of training abaft the beam, while abaft the barbette on each side are three more guns firing aft, with a considerable arc of training before the beam; aft again, alongside the main after barbette, are two such guns. In this way it is possible to fire twelve of these guns ahead, eleven abeam, and ten astern. The main belt of the "Courbet" is of 11-inch armour, reduced to 7-inch forward and aft, while over this is the protected deck of 3-inch. The broadside, for a considerable length of the ship, has, on the stake above this main belt, 7-inch armour; the light guns are within armour of the same thickness. The armour of the main barbettes is 10½ inch, and that of the gun-hoods 11 inch in thickness. The newer ships of the French Navy are mounting heavier guns, but many naval officers have, even still, a strong preference

for a ship armed with such a numerous battery of 12-inch and 5.5-inch guns."

GERMANY.

PROGRESS IN ARMAMENT.—It became known in the first week of July, on the authority first of newspaper reports and afterwards of the *Marine Rundschau* and the 1913 edition of *Nauticus*, that the two German battleships of the 1913 programme, known as the "Ersatz-Wörth" and "T," will be armed with eight guns of 15-inch calibre. The German authorities have thus advanced direct from the 12-inch to the 15-inch gun, without mounting, as had been understood, a weapon of 14-inch calibre. The latter had been attributed to the four battleships of the 1911 and 1912 programmes. In reply to a question in Parliament on July 9, however, Mr. Churchill said that, according to *Nauticus* and the *Marine Rundschau*, these four vessels carry ten 12-inch guns, and he added that "these publications, though not 'official,' are exceptionally well informed." For the sake of clearness, the progress in armament of the German Dreadnoughts may be set out in the following table:—

BATTLESHIPS.

Type.	Programmes.	Heavy Guns.	Secondary Guns.
"Nassau"	1906-07	Twelve 11-in.	Twelve 5.9-in.
"Ostfriesland"	1908-09	Twelve 12-in.	Fourteen 5.9-in.
"Kaiser"	1909-10	Ten 12-in.	Fourteen 5.9-in.
"Markgraf"	1911-12	Ten 12-in.	Fourteen 5.9-in.
"Ersatz-Wörth"	1913	Eight 15-in.	Sixteen 5.9-in.

BATTLE-CRUISERS.

"Von der Tann"	1907	Eight 11-in.	Ten 5.9-in.
"Moltke,"	1908-10	Ten 11-in.	Twelve 5.9-in.
"Goeben," and			
"Seydlitz"			
"Derflinger"	1911	Eight 12-in.	Twelve 5.9-in.

As regards the battleships, the apparent reduction from the twelve 12-inch guns of the "Ostfriesland" to the ten 12-inch of the "Kaiser" is due to a change in the disposition of the turrets, the former having only two of her six turrets on the centre line, while the latter has three of her five turrets so disposed on a plan similar to that of the British "Neptune;" the result being that while the "Ostfriesland" fires only eight guns on either beam, the "Kaiser," although armed with two fewer guns, fires ten. According to Messrs. Krupp's ordnance tables, the 11-inch guns fire a projectile of 300 kg., the 12-inch of 390 kg., and the 15-inch of 760 kg. The last-named being equal to 1,675 lbs. is lighter than the projectiles fired by the British 15-inch guns, the weight of which is given as 1,950 lbs. in the Vickers, and 1,850 lbs. in the Beardmore ordnance lists.

GREECE.

Rear-Admiral Lionel G. Tufnell, who was appointed Naval Adviser to the Greek Government in April, 1911, resigned the position after two years' service. Before leaving the Ministry of Marine in May, he expressed his admiration for the services rendered by the fleet during the recent war.

the efficiency both in the sea-going force and in the administrative departments on shore reflecting credit upon those engaged in them. A newspaper report from Athens in June stated that Admiral H. J. Carr, formerly Admiral Superintendent at Devonport dockyard, had been appointed head of the British naval mission in Greece.

The battleship "Salamis," under construction at the yard of the Vulcan Co., Stettin, is expected to be launched this year. Considerable interest attaches to this vessel by reason of her heavy armament. She has a displacement of 19,000 tons, engines of 40,000 horse-power to give a speed of 23 knots, and carries eight 14-inch and twelve 6-inch guns. Thus on a displacement equal to that of the early British Dreadnoughts, she carries an armament equal to that of the most powerful battle-cruiser completed—the Japanese "Kongo"—while her designed speed is a compromise between the 21 knots which has generally been given to the battleships, and the 25 or 28 knots to the cruisers, of the Dreadnought era. The hull and machinery of the "Salamis" will be constructed in Germany, but her guns and armour are being supplied by the Bethlehem Steel Company of America.

HOLLAND.

NINE DREADNOUGHTS PROJECTED.—A Royal Commission which was appointed to inquire into the question of the defence of the Dutch Indies issued its report in July. It proposed the establishment of a new fleet for the Netherlands and its Colonies, as the principal means of defending the Archipelago against direct attacks and of maintaining its neutrality in time of war. The Commission recommended that nine Dreadnoughts, each of 21,000 tons displacement, should be built, of which five should be permanently stationed in the East Indies, and supported by a strong torpedo flotilla. The principal base suggested for the fleet was Tanjung Priok, where three forts should be provided. Minor bases are advocated at certain ports of the Archipelago. At present the Netherlands Navy includes nine coast defence battleships and seven protected cruisers.

ITALY.

NEW SUBMARINES.—Four types of submarine craft are building or completing for the Italian Navy. The "Zoea," which was launched on March 2, 1913, is one of a class of eight boats ordered from the F.I.A.T.-San Giorgio Co. of Spezia, which firm is supplying a design for British submarines. These eight boats are of 295 tons submerged displacement, have engines of 600 horse-power, a speed of 14½ knots on the surface and 8½ knots when submerged, and carry two torpedo tubes. Another and more powerful type is represented by the "Pullino" and "Ferraris," of 394 tons displacement, and having heavy oil engines of 1,200 horse-power. These vessels have recently been completed by the F.I.A.T.-San Giorgio Co. at Spezia. A third class is being built at Venice, and is represented by the "Nautilus" and "Nereide," which have a surface displacement of 221 tons, and engines of 600 horse-power. Lastly, there is the "Atropo," which was launched on March 22, 1912, from the Germania yard, Kiel. This boat has a displacement of 320 tons when submerged and 240 tons on the surface. She has two Diesel engines of 350 horse-power each for surface propulsion, giving her a speed of 12½ knots, her radius of action on the surface being 1,300 miles. When submerged, she is driven by two electric motors of a combined horse-power of 400, with which she has a radius of action of 40 miles. The completion of these four classes will

augment the Italian submarine flotilla to 20 boats, of which 19 will be modern and effective.

JAPAN.

NEW BATTLE SQUADRON.—A Reuter telegram from Tokio, dated May 4, stated that contracts had been placed with the Kawasaki, Mitsu Bishi, and Yokosuka shipyards for the construction of three Dreadnoughts, which will be sister-ships to the "Fuso." The last-named vessel was laid down at Kure in March, 1912, and her displacement of 31,000 tons and armament of twelve 14-inch guns will make her when launched the largest and most powerful battleship in the world, though she will be equalled within a few months by the American battleship "Pennsylvania." The yards to which the construction of the three new ships is allotted are at present engaged in building or completing a battle-cruiser each of the "Kongo" type. The Yokosuka dockyard has the "Hiyei," but as this vessel was launched on November 21, 1912, a new battleship may be immediately laid down on the same slip. The Kawasaki yard, Kobe, and the Mitsu Bishi yard, Nagasaki, have the "Haruna" and "Kirishima" respectively on the stocks, but as both vessels were laid down in March, 1912, they will soon be going afloat. As soon as the three new ships are begun, Japan will have 12 Dreadnoughts completed or building, eight being battleships of the "Satsuma," "Kawachi," and "Fuso" types, and four battle-cruisers of the "Kongo" class.

RUSSIA.

ORDNANCE CONTRACT.—The contract for the erection of a new private gun factory in Russia, and for the supply of a number of guns and mountings to the Russian Fleet, which was described in the July issue of the JOURNAL, has been awarded to Messrs. Vickers, Ltd. A telegram to this effect was published in *Engineering* on July 4. The capital of the new company is to be £1,500,000, and the construction of the works has already been begun.

MILITARY NOTES.

BRITISH EMPIRE.

APPOINTMENTS, PROMOTIONS AND RETIREMENTS.—The following are the principal appointments for July:—

Appointments: Lieut.-General Sir H. S. G. Miles, K.C.B., C.V.O., to be Governor and Commander-in-Chief of the City and Garrison of Gibraltar, July 26th; Major-General E. S. May, C.B., C.M.G., British Service, to be a Brigade Commander (India), May 25th; Major-General G. A. Cookson, C.B., to be Colonel of the 29th Lancers (Deccan Horse), July 18th; Lieut.-General Sir J. W. Murray, K.C.B., to be General Officer Commanding-in-Chief of the Scottish Command, from December 8th, 1913; Major-General Sir F. Lloyd, K.C.B., C.V.O., D.S.O., to be General Officer Commanding London District, from September 3rd, 1913.

ROYAL REVIEW OF TERRITORIAL FORCE.—On July 5th the 1st and 2nd London Divisions and Army Troops, Territorial Force, were reviewed by the King in Hyde Park. The following units took part in the review:—

Army Troops: The Hon. Artillery Company (Infantry), Telegraph Companies Royal Engineers, London Electrical Engineers.

1st London Division: Field Companies Royal Engineers, 1st London Infantry Brigade, 2nd London Infantry Brigade, 3rd London Infantry Brigade. Divisional troops: Army Service Corps and Field Ambulances.

2nd London Division: Field Companies Royal Engineers, 4th London Infantry Brigade (including the 28th County of London Battalion and the Inns of Court Officers Training Corps), 5th London Infantry Brigade, 6th London Infantry Brigade. Divisional troops: Army Service Corps, Field Ambulances, 25th Battalion (Cyclists) London Regiment; Cadet Brigade (four battalions).

The numbers present on parade were officially stated to have been: Officers, 716; other ranks, 14,798; made up as follows:—

	Establishment.		Strength.		On parade.	
	Officers.	Other ranks.	Officers.	Other ranks.	Officers.	Other ranks.
First Division ...	445	14,825	374	11,162	317	7,277
Headquarter units ..	42	938	40	832	28	381
Second Division ..	466	15,127	406	9,986	331	6,224
					676	13,882

The Yeomanry and Royal Artillery present on parade dismounted numbered 40 officers and 916 of other ranks.

After inspecting the troops, the King witnessed the march past; after which the units proceeded to their points of assembly and subsequently dispersed.

On the following day the King sent a message to Lieut.-General Sir A. E. Codrington expressing his pleasure at seeing the Territorial Force of the London district so well represented, his satisfaction with their steadiness on parade, and his appreciation of the assistance given by members of the Territorial Force Association and the co-operation of employers in ensuring the success of the review.

DOGS IN HIRED TRANSPORTS.—The Secretary of the War Office announces that it has been decided that dogs will only be carried in hired army transports when a certificate is received from the owner's last or present commanding officer that the animal is trained for military purposes. Hounds for recognized hunts and regimental pets will be specially considered if application is made to the War Office three weeks before passage is required. In freight ships and packets owners must, as heretofore, make their own arrangements, but should note that dogs once taken aboard cannot be landed again in the United Kingdom until permission has been received from the Board of Agriculture.

Australia.

AUSTRALIAN INTELLIGENCE CORPS.—A Military Order (M.O. 665/1912) of December, 1912, introduced various changes in the organization and administration of the Australian Intelligence Corps, as shown by the following extracts:—

Organization.—The existing organization of the Corps as distinct commands will cease on and after the 6th December, 1912. Thereafter

the corps will comprise six district commands as an integral portion of the Commonwealth Section of the Imperial General Staff, the Headquarters portion of the corps being absorbed into the command of the 3rd Military District. The work of the corps will be supervised by the Chief of the General Staff through the Director of Military Operations and the General Staff Officers in districts.

The Officers Commanding in Military Districts will be "attached to the General Staff," and will be responsible for the organization, maintenance, and command of the corps in respective districts. In each Military District the corps will form the "Intelligence Section" of the General Staff.

The annual establishment of the corps shall be as laid down. The principle governing the establishment in respective districts is that sufficient officers should be available for the performance of intelligence duties:—

- (i) As may be necessary within the Military District.
- (ii) And with such "formations" of the Field Army as may be operating in the district.

It is not intended that guides should be enrolled during peace time. The value of a guide lies in his knowledge of a certain locality, beyond which his services should not be required. Officers commanding the corps in districts will, however, maintain a register of available guides. The whole of the guides registered in a Military District will, in war, form a "Company of Guides." In compiling the register, a "Company" will be subdivided into sub-districts as may be necessary, and there should be a Chief Guide for each sub-district. Guides will not be utilized during peace operations without the authority of the Military Board; when, however, it is considered desirable so to employ them, they will be paid such daily rates as may be prescribed.

Training.—The work performed by members of the corps in the Intelligence Sections of the General Staff in districts may be regarded as "home-training." At Camps of Continuous Training, District Commandants will allot the corps in such a manner as will give to members thereof the maximum of available instruction in intelligence duties in the field. In this respect it is to be borne in mind that Staff duties, such as the arrangements for camps, marches, &c., do not fall within the scope of Intelligence Sections of the General Staff. Attention should be concentrated on the duties of guiding by day and night, the provision of guides, map reading, the acquisition of information in the field, and the organization of methods for its collation, transmission, and record.

PROVOST STAFF.—Military Orders for January, 1913, lay down the establishment of the Provost Staff for 1913 as: One Assistant Provost Marshal, five Provost Sergeant-Majors, and nine Provost Sergeants for the whole Commonwealth.

The duties of the Provost Staff will be as follows:—

- i. To assist Commanding Officers of Militia Units and Area Staffs in ensuring that the universal obligation in respect to Naval and Military Training is not evaded. In this duty the recommendations and actions of the Provost Staff will be consistent with an intelligent,

sympathetic, and firm administration of the compulsory clauses of the Defence Act.

ii. The Provost Staff will compare registrations in each Area with information available from educational, electoral, and municipal authorities, factories, stores, and all business establishments, as well as from personal observations and any other sources; investigate discrepancies; collect evidence as to the reasons for such discrepancies; collect and report to the Brigade Major all apparent cases of default.

iii. The Area Officer will forward to the Provost Staff, on the first Monday in each month, lists of defaulters from medical inspection. The Provost Staff will investigate the reasons for same, and report to the Brigade Major before the last Saturday of the same month—

a. The result of their enquiries in each individual case.

b. The reasons why the trainees have not presented themselves for medical examination.

c. Their opinion (based upon the merits of each case). . . as to whether prosecution is necessary or not, giving reasons.

iv. Commanding Officers of Militia Units and Area Officers will forward a return of defaulters from compulsory parades direct to the Provost Staff on the first Monday in each month. The Provost Staff will investigate each case, and report to the Commanding Officer or Area Officer respectively by the last Saturday in the same month the result of their investigation, stating fully—

a. The reasons for such absence—whether through sickness or otherwise.

b. Why leave of absence was not applied for.

c. Any circumstances which may warrant a relaxation of the conditions specified in section 135 (1A) (a) of the Defence Act.

d. Their opinion as to whether prosecution is necessary or not, giving reasons.

v. Area Officers will forward to the Provost Staff on the first Monday of each month lists of those who have failed to report for enrolment in the Citizen Forces, giving full information regarding dates on which written notices instructing trainees to attend were posted or handed to each trainee concerned, and the date on which each trainee was instructed to report.

The Provost Staff will investigate the reasons for absence, and will forward to the Brigade Major before the last Saturday of the same month—

a. The result of their inquiries in each individual case.

b. The reasons why each trainee failed to report for enrolment.

c. Their opinions as to whether prosecution is necessary or not, giving reasons.

vi. In cases of neglect to render personal service, the magistrate will invariably be asked to commit the defaulter for a period equivalent to the training missed. Such committal should be, when possible, to the care of a member of the Provost or Instructional Staff, as may be found most convenient and practicable, who will arrange to hold the necessary defaulters' parades. In the event of any defaulters failing to comply with the judgment of the Court, action will be taken by the Area Officer, in accordance with the instructions issued to proceed against such offenders for committal for detention.

vii. It will not be obligatory on the part of the Area Officers to accept or carry out the recommendations submitted by the Provost Staff, but, nevertheless, having in view the investigations which have been made concerning the case, Area Officers should be guided to a great extent by such recommendations.

viii. The duties of the Provost Staff, as per paragraphs iii., iv., and v. are to be purely consultative, and of an advisory character. They will fully investigate all such matters as are herein laid down, and will offer advice only. They will not impair the responsibility of Commanding Officers and Area Officers, with whom decision and action must lie.

AUSTRIA.

MEDAL FOR 1912-13.—The Emperor has founded a commemorative medal (yellow ribbon, black double stripes) for men called up during 1912-13.

RECRUIT CONTINGENT.—It is reported in the Press that the further increase to the recruit contingent to be demanded from the Delegations in October will amount to 15,000 men for the Common Army and 5,000 for each of the two *Landwehrs*, total 25,000. This will raise the peace strength by a further 50,000 men. The total cost of the increase is estimated at £1,000,000.

EMIGRATION.—A law forbidding the emigration from Hungary of persons liable to military service has been sanctioned by the Hungarian Parliament for one year.

MANCEUVRES.—For financial reasons it is doubtful whether there will be Austro-Hungarian manoeuvres this year, but according to the Press, the following will take place:—

<i>Locality.</i>	<i>Troops.</i>	<i>Date.</i>
(a) Beneschau (S.E. of Prague) ...	{ 8th (Prague) Corps 9th (Leitmeritz) Corps 1st (Crakow) Corps Part of 2nd (Vienna) Corps.	Beginning of September.
(b) S.W. Hungary (Area: Platten Lake—Drave River—Danube) ...	{ 5th Honved Cav. Div. 3rd, 4th, and 8th Common Army Cav. Bdes.	August 20th to 30th.
(c) Bakony Forest (S. of Komorn) ...	Forces of all arms.	August.

ARMY CYCLISTS.—A military cyclist meeting for officers and men was held at Görz in the first half of June. Government paid the expenses of competitors and offered prizes, and the events included a 60 kilometre patrol (one officer and eight men) race under service conditions.

BELGIUM.

ARMY BILL.—The Army Bill, which increases the annual contingent from 19,000 to 33,000, was passed by the Chamber on May 28, and adopted by the Senate on June 20.

ANNUAL LEVY FOR 1913.—A ministerial circular of May 4 points out that the law of April 21 abolishes the exemption from service of recruits of the 1913 class who already have a brother serving, except in the case of recruits who were married before March 15, 1913. The class of 1913 commenced to join the Army during the third week in May.

ANNUAL LEVY OF 1911.—The infantrymen of the 1911 class were transferred to reserve on May 6; the fortress artillery were to be transferred July 17, and the engineers June 2.

CORPS OF CIVIL ENGINEERS FOR ARTILLERY.—A Royal decree of May 5 created a corps of civil engineers for the artillery, to be under orders of the Inspector-General of Artillery. This corps will be recruited from subaltern officers of artillery of at least seven years' service. The corps will control the manufactories of artillery and the technical office of the Inspector-General. For the present it will consist of five engineers-in-chief, five principal engineers, and twelve 1st, 2nd, and 3rd-class engineers. In consequence of the creation of this corps the special services and companies of artillery and the inspections of powders and arms are suppressed.

CANALS.—Work on the maritime canal to Brussels is progressing, and the canal should be opened in 1914. Tenders have been invited for the work necessary to make the Brussels—Charleroi Canal navigable for 360-ton barges. The canal connecting the Lys and the Yser rivers is now being completed. It was begun about 1868.

TERMONDE.—A Royal decree of May 1 announced the *déclassement* of the three permanent batteries of the fortress of Termonde.

FRANCE.

APPOINTMENTS.—General Dubail (age 62), commanding the IXth Corps d'Armée, and General Sordet (age 60), commanding the Xth Corps d'Armée have been appointed members of the *Conseil Supérieur de la Guerre* in succession to Generals Meunier and Marion, who have been placed in the reserve. General Dubois goes from the 1st Cavalry Division to the IXth Corps d'Armée, and General Dafforges from the 19th Infantry Division to the Xth Corps d'Armée. General Ebener, from the Staff College, goes to the 39th Division, General Lacombe de la Tour becomes commandant of the Staff College. General Bridoux replaces General Buisson in command of the 5th Cavalry Division at Reims. General Buisson takes over the command of the 1st Cavalry Division at Paris.

Marocco. (Events in May and June, 1913).

AGITATION IN FRANCE AGAINST MILITARY ACTION IN MAROCCO.—During June the agitation in France against the "Maroccan War" gained ground. It was urged that the French Government was asking the country to make great sacrifices to strengthen its military position in Europe; and that these sacrifices might be made on a much smaller scale if 60,000 men were not locked up in Marocco. Also that the French casualties in the various engagements with the tribes were becoming a serious drain on a country with a dwindling population, to which every soldier was valuable. With reference to the first of these points it should be noted that, of the 62,153 men in Marocco in March, 1913, only 31,455 were Europeans, and of these only 3,462 belonged to army corps quartered in France. With reference to the second point, the casualties of the French and native troops in Marocco between May 24, 1912 and May 24, 1913 amounted to about 408 killed and 1,554 wounded. Since May

24 last there have been a further 87 killed and 171 wounded. The rather heavy casualty lists of the beginning of June brought the anti-Maroccan agitation to a head, and as a result of speeches in Parliament and a Press campaign the Government gave strict orders against any forward movement in Morocco. It is probable that General Lyautey was also told to avoid serious engagements, and more especially losses, at all costs.

SOUTHERN MAROCO.—Hadj Thami el Glaoui, in command of the Sultan's forces before Taroudant, failed in his attempt to negotiate the surrender of the town.

May 23 : The Sultan's forces were completely successful in an action under the walls of Taroudant. El Hiba's forces were dispersed with a loss of 500 killed. The town was captured, El Hiba escaping in disguise.

May 24 : A detachment of the Sultan's forces drove the brother of El Hiba from Agadir and occupied that town also. About the 28th El Hiba's forces rallied, and drove the Sultan's detachment from Agadir.

May 31 : The Sultan's detachment, assisted by the guns of a French warship, retook Agadir. About June 12 Agadir was attacked by some southern tribes, led by the Kaid Anflous. The Sultan's forces beat off the attack, with the help of two French warships, but the Sultan's hold on Agadir was still considered dangerously weak.

June 16 : A battalion of French troops with four guns embarked at Mogador for Agadir, where they are holding the town. Since their arrival they have been a good deal troubled by rifle thieves.

The successes of the Sultan's forces in the south have had a great effect throughout Morocco. The whole valley of the Sous is now under the effective rule of the Sultan for the first time for hundreds of years.

TADLA REGION.—At the end of May and beginning of June the Tadla region was quiet, although Moha-ou-Hamou was believed to be collecting a hostile force in the Atlas.

June 5 : Colonel Mangin's troops ambuscaded a hostile party who had come to loot a friendly village. No French casualties. The tribesmen lost 11 killed, 22 wounded, and 11 prisoners.

June 8 : Colonel Mangin moved south from Kasbah Tadla against Moha-ou-Hamou. After marching seven and a half miles the enemy were found in trenches and buildings, from which they were driven without much difficulty, chiefly by artillery fire. The enemy was pursued by part of the column, but near Kasbah Ksiba, about ten miles further on, the cavalry (three goums and partisans) ran into large forces of the enemy, and had 21 men killed (including two officers), and two men wounded. On the arrival of Colonel Mangin and the infantry Kasbah Ksiba was carried by assault, the enemy leaving 30 men killed by the bayonet on the ground. Total French casualties during the day: 25 killed, 33 wounded. The enemy are said to have lost 140 killed.

June 10 : Colonel Mangin, hearing that the enemy had again collected, returned to Kasbah Ksiba. The enemy in great strength held the ruins of the Kasbah and the surrounding crests. After a severe struggle, including three bayonet charges, the enemy was dispersed. An aviator flew over the scene during the combat. French casualties: 45 killed, 102 wounded. The enemy are said to have lost 400 killed.

Since June 10 the Tadla region has been quiet. It is said that a post is to be left at Kasbah Tadla, and the bulk of Colonel Mangin's

column is to be withdrawn to Meknès, probably in hopes of avoiding further engagements.

NEAR MEKNÈS.—*May 26*: Colonel Henrys, with 13 companies, cavalry, and artillery, dispersed the dissident Beni M'Tir and Beni M'Guild after a running fight lasting nine hours. French casualties: five wounded.

May 29: The insurgent Zemmour raided a post on the railway between Kenitra and Meknès; they were beaten off and pursued some distance. French casualties: nine killed (Maroccan regular troops). The raiders are said to have lost 14 killed and five wounded.

The Meknès district appears to be quiet at present. Various columns are patrolling the country.

EASTERN MAROCCO.—At the end of May and beginning of June a certain amount of agitation was apparent in the tribes about Taza, where the agitator Chonguiti was attempting to proclaim himself Sultan.

May 28: General Alix, who had returned to M'Soum with his column, had an engagement seven and a half miles north of the post. General Alix had with him 15 companies, four and a half squadrons, and a battery, about 4,000 men in all. The tribesmen were said to be about 5,000 strong, and were driven off with heavy loss. At one time the French left flank guard was hard pressed, but was relieved by a cavalry charge. French casualties: eight killed and 28 wounded.

On May 31 and June 5 small raiding parties were encountered by French troops between Taourirt and the Mouloya.

The agitation in Eastern Morocco now appears to be dying down.

Attempts to ransom the three European women carried off by raids in May have so far failed. Chenguiti has purchased one of them from the raiding party, and has made her his favourite wife. His followers are annoyed that he should do so much honour to a Christian Frenchwoman.

FRENCH FORCES IN MAROCCO.—The Senegalese troops in Morocco at the end of June were believed to be composed approximately as follows:—

Eleven battalions of 800 men each	...	...	...	8,800
Eight companies conductors of 200 men each	...	...	...	1,600
Eight mixed batteries of 72 Senegalese each	...	...	...	576
One squadron Spahis	150
Administrative and medical units	801
<hr/>				
Total, about	12,000
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Two more battalions are expected by the end of August.

The whole of the 1st and 2nd Chasseurs d'Afrique are believed to be now in Morocco or on their way there.

It was intended to bring the 7th and 14th Battalions of Chasseurs à Pied back to France as soon as the situation permitted.

It is reported in the Press that the Minister for War has decided to form mixed regiments for Morocco. They will be called regiments 1 to 6 of Colonial Infantry of Morocco, and will each consist of one European battalion and two Senegalese battalions.

COMMUNICATIONS: ROADS.—The improvements to the Safi—Marrekesh and Safi—Mazagan roads were expected to be completed in July. The Mogador—Marrakesh and Mazagan—Marrakesh roads were fit for motors.

TELEGRAPHS.—The construction of the Rabat—Casablanca line was completed; that of the Safi—Mogador line was about to be commenced.

FRANCO-SPANISH AGREEMENT.—Franco-Spanish negotiations were in progress with a view to co-operation against the tribes which are giving both Powers trouble in Morocco.

FINANCIAL: MOROCCAN LOAN.—The Committee on Foreign Affairs has made its report on the Government's proposal to guarantee a loan of £9,200,000 for Morocco; the Committee's recommendations are as follows:—

	Government Proposal.	Committee's Recommendat'n.
Indemnity due to France from Morocco for 1910 campaign ...	2,800,000	—
Debts of Moorish Government ...	1,000,000	940,000
Indemnities to victims of rising in 1912 ...	400,000	240,000
¹ Installation of Government at Rabat ...	600,000	120,000
Cadastral Survey... ...	100,000	60,000
Railway Surveys ...	—	20,000
Posts, telegraphs, and telephones ...	200,000	427,600
Municipal Works ...	130,000	80,000
Works on port of Casablanca ...	2,000,000	2,000,000
Roads ...	1,050,000	1,050,000
Hospitals ...	400,000	400,000
Schools ...	400,000	400,000
Agriculture and Forestry ...	100,000	100,000
Maps ...	20,000	20,000
	£9,200,000	£5,857,600

LANGUAGES.—General Lyautey has arranged for the instruction, promotion, discipline and adequate payment of official interpreters in Arabic and Berber for the civil government.

NUMBERS OF POPULATION OF MOROCCO.—A census of the Chaouia district in 1912 gave a total of 205,000 inhabitants for about 2,795,041 acres. Working on this basis, allowing that the Chaouia is, at least, as densely populated as any district in Morocco, and allowing also for many districts being practically uninhabited, it would seem that the total population of Morocco is under 3,500,000.

ITALY.

RECRUITING LAW.—A Bill has been introduced by the War Minister in the Chamber of Deputies to modify the existing recruiting law in the following respects:—

1. The term of service for men of the 1st category, put back for re-examination, will be two years.
2. The standard of height will be 5 ft .65 in.
3. Men enrolled in the 2nd category can be called up for training for one or more periods of time, not exceeding 12 months in all.

¹ The Committee is of opinion that, although Rabat may be the best seat of administration at present, the capital must eventually be located at Fez; therefore, large expenditure on Government buildings at Rabat is inadvisable.

REQUISITIONS.—A Bill has been passed authorizing the requisitioning of animals, vehicles, &c., on mobilization, or if mobilization is imminent.

The following are the chief points:—

1. All kinds of horses, vehicles, harness, boats, aeroplanes and airships can be requisitioned, except ordinary bicycles.
2. The owner of any animal, vehicle or other thing liable to requisition must inform the registering authority of the death or sale of these.
3. The Minister of War issues the order for putting requisitions in force with the consent of the Cabinet.
4. Owners must produce their animals, vehicles, &c., at the places selected when ordered, and they can obtain an allowance, in addition to the selling price, if the animals, &c., are produced within 24 hours of the issue of the order.
5. Animals, vehicles, &c., may be inspected annually, and once in five years a trial mobilization may be carried out in one or more provinces, for a period of not more than 30 days, during which animals and vehicles requisitioned may be hired.

COLONIAL ARMY.—A "Carabinieri" legion is being formed for service in Libya. The proposed establishment is:

Headquarters, and a school for native recruits, at Tripoli; one division at Tripoli, and one at Benghazi. The total strength will be 45 officers and 1947 other ranks.

As regards other troops for colonial service it is hoped to form a long-service Colonial Corps by voluntary enlistment. The terms of service suggested are four or five years, and a high rate of pay and special privileges will be offered.

JAPAN.

NEW WAR MINISTER.—*The Times* of June 26 reports that Lieut.-General Kusunose has succeeded General Kigoshi, who has suddenly resigned. The new Minister was born in 1858, entered the artillery in 1879 and has been successively Chief Staff Officer of the 12th Division, Commander of the Tsushima garrison, of the Osaka Arsenal, of the Saghalien Government, Tura fortress, and head of the Ordnance Committee.

NEW VICE-MINISTER OF WAR.—Lieut.-General Oka, having resigned on account of ill-health, was succeeded by General Hongo as Vice-Minister of War on May 5.

NEW TRAINING MANUALS.—New and revised editions of the "Engineers' Training Manual" and the "Cavalry Musketry Regulations" appeared during June.

JAPAN AND AMERICA.—In connection with the present difficulty with the United States the following facts are of importance. In 1911 the United States of America took about £14,300,000 of Japanese exports, or 33 per cent. of the total. Japan imported from America £8,100,000, about one-sixth of the total. Japan is entirely dependent on America for the sale abroad of Japanese tea and silk, and as regards imports, for the whole of the wheat-flour imported, most of the kerosene oil, and vast quantities of leather and raw cotton. War between America and Japan would mean the total collapse of many Japanese industries.

ARMY RETRENCHMENT.—A British paper published in Japan says that it is authoritatively stated that the post of commandant of the Tokyo garrison will be abolished and its business taken over by the commander of either the 1st or the Imperial Guard Division. The abolition of the post will save the War Office about £1,530 annually.

According to an extract from the Japanese *Official Gazette* of April 23, 1913, the garrison of Japanese troops in Kabafuto (Saghalian) was to be withdrawn from May 11, 1913.

SPAIN. (Events in May and June, 1913).

OPERATIONS IN NORTH AFRICA.—The Moorish unrest gradually developed during May. Their hostility seems to have been directed against the Spaniards, and was said not to be anti-European; 4,000 rifles were assembled outside Tetuan. Attacks were made during June against Laraiche, Arzila and Tetuan, and communication between Tangier and Tetuan was cut off. Hostile movements were also made by the Arabs near Melilla.

The situation at the end of June was as follows:—

Colonel Silvestre, with 5,000 men, was operating with a column between Alkazar (Laraiche) and Arzila. General Alfau was at Tetuan with a force of 10,000 men, and Monte Laurion, on the road to Tangier, was held by a battalion of infantry, a section of artillery, and some engineers. Fighting was going on near Tetuan, but no details were available, except that an engagement had taken place on June 20, when the Spaniards had three officers and several men killed and six officers and 14 men wounded.

UNITED STATES.

PANAMA ZONE.—A further appropriation has been asked for in order to continue work on the fortifications of the Panama Canal, because the money previously voted had been almost expended.

The armament included in the original vote included the following:—

Ten 14-inch guns with disappearing carriages.

Twenty-eight 12-inch mortars with carriages.

Twelve 6-inch guns with disappearing carriages.

Twenty 4.7-inch howitzers with mounts.

According to the Secretary for War, work is in progress on all except the howitzers. The 14-inch disappearing carriages, ten of the 12-inch mortar carriages and the 6-inch disappearing carriages are being made at the Watertown Arsenal, while eight of the 14-inch guns, 24 of the 12-inch mortars, and the 6-inch guns are being made at the Watervliet Arsenal.

According to the *Army and Navy Journal*, a 16-inch gun will be placed on the top of Perico Island, which will be capable of firing a projectile of 2,400 lbs.

A complete military reconnaissance of the Canal Zone and contiguous territory has been carried out by the 10th Infantry, and the existing maps are being amplified.

The United States Government has outlined its policy regarding the supply of fuel in the Canal Zone. It does not propose to monopolize the coal business, but will sell fuel itself and will rent to private companies

the facilities which it will itself enjoy in its capacity as fuel merchant. Private competitors will do business under a revokable licence, and are not likely to incur heavy expenditure upon plant, &c. The Government intends to keep the prices down, and it is considered that coal will be available at Colon at from 27/6 to 30/- a ton.

Up to date the only application for accommodation has come from the Deutsches Kohler Depôt Gesellschaft of Hamburg, acting on behalf of 16 German steamship companies, who require storage room for 15,000 tons of coal.

The Canal authorities destroyed the dyke south of Miraflores on May 18 and allowed the waters of the Pacific Ocean to enter the southern section of the Canal.

Water was admitted into the Gatun Locks for the first time on June 14, for the purpose of testing the valves. The test was considered satisfactory.

NAVAL WIRELESS STATION.—The Federal Telegraph Co. of San Francisco have been given the contract for the installation of the radio equipment for the naval wireless station in the Canal Zone. The station will be officially known as the Darien Station, and is to be located near Caimeto, half way across the isthmus, at a point between the railroad and the canal, and on an elevation. When in operation the station is to be capable of communicating without relay to the stations at Arlington and San Francisco.

GOVERNOR OF THE PANAMA ZONE.—The Press states that Mr. R. L. Metcalfe, editor of Mr. Bryan's weekly review *The Commoner*, has been nominated by the President as Civil Governor of the Panama Zone.

NICARAGUA.—President Wilson has given his approval to the treaty with Nicaragua negotiated by Mr. Taft, which is to give the United States the exclusive right to build a canal across Nicaragua, as well as a site for a naval base in the Gulf of Fonseca. In return the United States are to pay Nicaragua £500,000. It is now expected that the former democratic opposition to the treaty will be withdrawn, and its early ratification is anticipated.

AERONAUTICAL NOTES.

BRITISH EMPIRE.

DIRECTORATE OF AERONAUTICS.—It was officially stated in Parliament that the creation of a new department at the War Office was in contemplation, to deal with all matters relating to aviation.

FATAL ACCIDENT.—We regret to record the death of Major A. W. Hewetson, 66th Field Battery R.F.A., on July 17 at the Bristol School of Instruction at Salisbury Plain. The deceased officer was piloting a Bristol monoplane, and appears to have made too sharp a turn when flying at a height of 500 feet, with the result that the machine dived suddenly to the earth.

AUSTRIA-HUNGARY.

EXAMINATION FOR PILOTS.—The examination for field pilots has been made more difficult. Competitors are now required to make 60 ascents and landings and three cross-country flights, on biplanes, of over 100 kilometres each, during which a minimum altitude of 1,200 metres must be reached. One landing must be made on cultivated ground.

MACHINES AVAILABLE.—The Press reports that, in July, 1912, 30 Etrich machines were available, and ten Lohner Daimlers were ordered. At the time of the crisis (October, 1912) it was found that, owing to the small number of machines available and the consequent large amount of use these got, half of them had become unserviceable, and the War Ministry ordered 20 more. It is stated that there are now 40 serviceable machines in good condition belonging to the Flying Corps. The general opinion in Austrian military aviation circles is said now to be in favour of biplanes.

Early in June Count Zeppelin paid a visit to Vienna and Wr. Neustadt on his airship "Sachsen." It is reported in the Press that Austria-Hungary will order six Zeppelin airships, in consequence, to be delivered from 1915 onwards, and quartered at Vienna, Prague, Lemberg, Innsbruck, Buda Pest and Serajevo, where special sheds will be erected. The Zeppelin Co., having contracted to construct eight airships for Germany to be delivered by 1915, cannot undertake to commence the delivery of the Austrian ships before that year.

AVIATION MEETING.—An international aviation meeting was held at Aspern from June 15 to 22. The Austrian aviator, Illner, reached a height of 4,500 metres with two passengers.

CHILE.

AVIATION.—Two first-lieutenants, four second-lieutenants, and five sergeants have been selected to attend the course of instruction at the Military Aviation School, which began on April 6. Two first-lieutenants, two second-lieutenants, and two sergeants have been ordered to France in order to qualify for the pilot's certificate of the International Aero Club. The sum of £27,000, has been authorized for the purchase of new matériel for the Aviation School.

FRANCE.

AVIATION.—During the first five months of 1913 seventy-six pilots obtained the *Brevet Militaire*, as against thirty-five in the corresponding portion of 1912. The following numbers are given by *L'Aéophile* as regards pilots' certificates (non-military) in various countries up to December 31, 1912:—

Aeroplane: France, 968 (including some foreigners); England, 376; Germany, 335.

Dirigible: Austria, 24; France, 23; Germany, 22; England, 11.

HEIGHT RECORD WITH PASSENGER.—Perreyon, on a Blériot aeroplane with a 160-h.p. Gnome engine, attained a height of 5,100 metres (16,732 feet) at Buc on June 3. The ascent took 55 minutes (93 metres a minute), while the descent took 12 minutes (420 metres a minute).

GERMANY.

DIRIGIBLES.—The "Z.V.," or "L.Z. 18," was to be taken over by the Government this month.

A new airship of the Veeh type was said to be ready for trials.

FORTRESSES AND AVIATION.—By the refusal of the authorities to allow Glogau to become a supporting point for aeroplanes, it would appear that it is not considered advisable to establish such stations in the neighbourhood of fortifications, at any rate for the present.

FLYING STATION NEAR DUTCH FRONTIER.—It is reported that there is an intention to make Oberbach, two or three miles east of Heinsberg, a flying station.

HOLLAND.

NEW FLYING CORPS.—The conditions of service in and the establishment of the new Flying Corps have been published in Army Orders. The corps is to be under the immediate control of the Chief of the General Staff. All officers with five years' service and under 35 years of age are eligible. They must, in addition to obtaining the international "brevet," obtain a military one, the tests of which are as follows:—

- (a) A flight of 175 miles on the same machine in not more than four days, over a specified route. Three intermediate landings must be made during the flight at previously specified points.
- (b) A flight of at least 20 minutes duration at a minimum height of 2,640 feet.
- (c) A vol-plané from a minimum height of 330 feet.
- (d) Various minor repairs to the motor and chassis.

These tests must be carried out without a passenger.

Six months are allowed for the obtaining of each brevet. Officers must agree to serve three years in the Flying Corps and five years in the Reserve. If they are sent back to their units before they have completed three years, they must be called up for two periods, each of four weeks, every year for practice with the Flying Corps. The rank and file are to consist of volunteers from Militiamen who have performed their first period of military training. They are taken on probation for three months, at the end of which period they are to engage for a period of three years' service with the corps.

RUSSIA.

LONG DISTANCE FLIGHT.—Three Army airmen flew from Sevastopol to Kiev, via Poltava, a distance of some 600 miles, between June 2 and 5, on Nieuport monoplanes.

ARMY AIRMAN KILLED.—Lieutenant Balabushka, of the newly-formed 1st Flying Company, was killed at Peterhof, on a Nieuport machine, on May 31.

HEIGHT RECORD.—A Russian height record was established on June 10 by Staff-Captain Zametan, of the Officers' Flying School at Sevastopol, who is reported to have reached a height of 11,000 feet with a passenger in an 80-h.p. Morane machine.

JAPANESE MISSION.—Four Japanese officers are visiting the Russian military aviation establishments.

SEA-PLANE.—A Donne-Leveque seaplane has been delivered to the naval authorities by M. Beaumont, the French aviator.

SPAIN.

AERONAUTICAL SERVICE.—The *Spanish Gazette* gives the following details of the new aeronautical service. The service will be formed by developing the existing balloon section. The establishment will be:—

One colonel, 25 other officers, one veterinary officer, 21 technical subordinates, five artificers, 82 N.C.O.'s and trumpeters, 285 other ranks, 89 animals.

The force is divided into headquarters, a balloon section, an aeronautic section, and a dépôt. All officers, whether naval or military, will be nominated by the War Minister. There are 30 aeroplanes and 20 pilots being trained. There is a civil aeronautical school at Vittoria, with five aeroplanes.

SWEDEN.

NATIONAL FUND.—A national subscription in Sweden has produced £8,044, and a committee of the military and naval General Staffs have worked out a scheme for the disposal of the money. According to the Press, £2,815 is assigned to the Army for the purchase of a Breguet biplane with 120-h.p. motor, an instructional Breguet biplane, and a motor for the Nieuport already in possession of the Army; £5,185 is assigned to the Navy, and two seaplanes are to be purchased.

URUGUAY.

AVIATION SCHOOL.—The initial steps towards the creation of an aviation school have been taken. A professional aviator has been engaged as instructor in aeronautics for the first three months at a salary of about £5,000, and, according to the Press, he will have to supply the necessary matériel for the course. Seven military and three naval officers have been selected to attend the first course. The school is to be established at Cerrillos, near Monte Video.

THE WAR IN THE BALKAN PENINSULA.

(Chiefly from articles in the *Militär Wochenschrift*, July, 1913).

NOTE.—Most of the names not given in the two sketches will be found on the maps facing page 1504 of the October, 1912, and pages 1626-7 of the November, 1912, issues of this JOURNAL.—Ed.

(A) CAUSES OF THE WAR.

The causes of the war between Bulgaria and her Allies are summed up by the *Morning Post* as follows:—

"In the treaty of last year with Servia it was agreed that while Servia was to annex Northern Albania and Old Servia, Bulgaria was to have a strip of Macedonia of which the northern border would extend from Egri Palanka to Lake Ochrida. That treaty stipulated that Bulgaria should supply 100,000 men for the campaign in Macedonia, but Bulgaria, in fact, contributed to the conquest of Macedonia little more than a division, of which the principal service consisted in its marching to Salonica after the Greek capture of that city. The Bulgarians claimed the benefits of the treaty, though they had not rendered the services for which those benefits were to be the reward. They also claimed Salonica, not in virtue of a treaty with Greece, for there was no such treaty, but in virtue of their desire to possess it and of their presumed power to take it from

the Greeks. The Servians held that a treaty like that of last year must, like all treaties, be construed as though it contained the words *Rebus sic stantibus*, that is, provided there is no material change in the conditions. There were, however, three material changes: the first, that Bulgaria had not given the stipulated aid in Macedonia; the second, that Servia had given aid beyond the stipulations in the conquest of Thrace and the capture of Adrianople; and the third, that the Powers had withdrawn from the distribution a large part of Servia's share, including that access to the sea coast which was so important to her. Bulgaria, however, refused to discuss the question of equity either with Greeks or Serbs. . . . Thus the distribution of the spoils came to be a question of the relative strength of the claimants. What each is able to hold, that it is to have."

(B) DISTRIBUTION OF THE FORCES.

Immediately after the fall of Adrianople it became evident that the jealousies of the Allies might lead to complications.

BULGARIA.—The Bulgarian forces consisted of 12 divisions, including a newly-raised (12th) Macedonian Division. As soon as the peace preliminaries had been signed with Turkey, troops were moved westward, and began to be concentrated in two groups: (1) on the Sofia—Nish road, and (2) on the front Strumnitza—Serres—Kavalla. Communication between these groups was maintained by the 12th Division about Kustendil—Kochana. Two single line railways: Adrianople—Philippopolis—Sofia, and Dedeagach—Serres, each with a capacity of about ten trains of 60 axles a day, were available for the movement. As fresh troops arrived the original distribution appears to have been modified, till at the end of June it was as follows:—

The Third Army (3rd, 4th, 5th, 9th Divisions) under General Radko Dimitriev, was astride of the Sofia—Nish railway, headquarters about Tsaribrod.

The First Army (1st, 6th, 10th, perhaps also 12th Divisions) under General Kutincheff, was concentrated on the Upper Struma, headquarters about Kustendil. These two Armies, which were directly under General Savoff, the Commander-in-Chief, numbered about 160,000 men.

The Fourth Army (2nd, 7th, 8th Divisions) under General Ivanoff, which had moved from near Bulair, was about Serres and Drama. Strength about 75,000 men.

The 11th Division, which had formed part of the old Second Army (now broken up) was still said to be at Adrianople, augmented by various L.O.C. troops from the area Mustapha Pacha—Chatalja.

A Covering Force composed of miscellaneous details, dépôts, recruits, militia, etc., was assembled at Shumla to watch the Rumanian frontier.

The Bulgarians could thus place some 300,000 men in the field in spite of their losses in the Turkish War.

SERVIA.—The Servian Army consisted of five 1st *Ban*, five 2nd *Ban*, five 3rd *Ban* divisions, a cavalry division, and some independent brigades. After the fall of Adrianople the two Servian divisions of the Siege Army made haste to regain their country. The distribution about the middle of June was:—

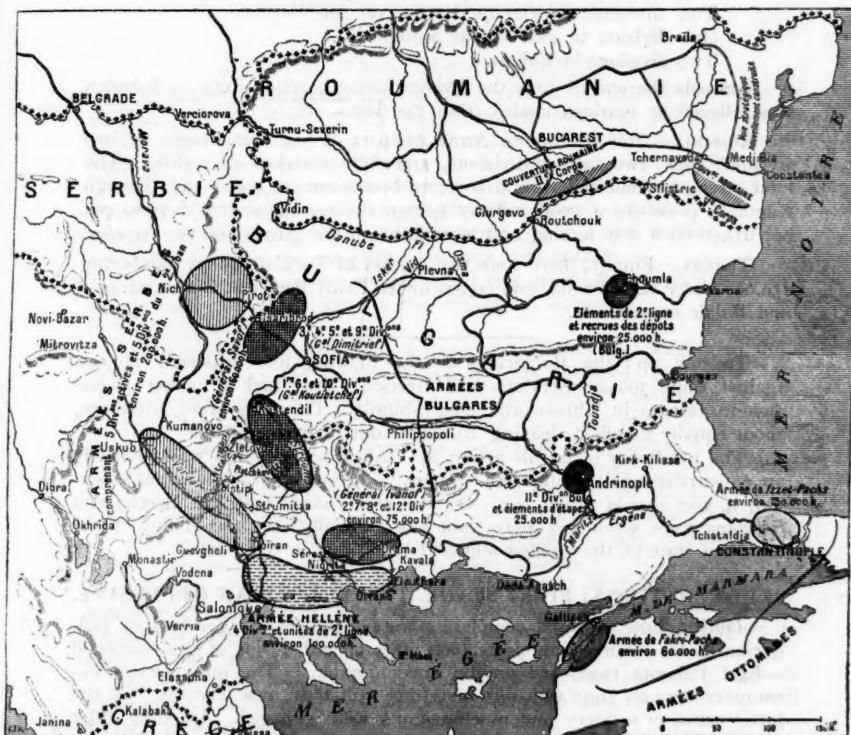
Second Army: 1st Timok Division and Cavalry Division on the front Pirot—Zajetchar, confronting Bulgarian Third Army, and covering the direct route from Sofia to Belgrade.

First Army: Five divisions in the area Egri Palanka—Veles—Kalkandele—Kumanovo; headquarters Uskub, confronting Bulgarian First Army.

Two divisions (1st Morawa and 2nd Timok) maintaining touch with the Greeks on the line Veles—Geveghli.

Third Army: Two and a half divisions (2nd Shumadja and 2nd Drina, and the Javor Brigade) were distributed in garrison in the Sanjak of Novi Bazar; headquarters probably Prizrend.

ESTIMATED SITUATION BEFORE THE OUTBREAK OF HOSTILITIES.



(From *L'Illustration* of July 5th, 1913.)

Towards the end of June the 1st Morawa Division (one of the two which had been keeping communication with the Greeks) was drawn into the First Army, as was also the Cavalry Division from the Second Army; the latter Army was, however, strengthened by the transfer of one division from the First Army and by various 3rd *Ban* formations. The assistance of the Montenegrins, who took over some of the Servian garrisons in the Sanjak of Novi Bazar, and also sent a division to the front, enabled the Servians to reinforce their fighting line, which now consisted of:—

Second Army: Three divisions of 1st and 2nd *Ban* troops, and various 3rd *Ban* units and heavy artillery.

First Army: Six divisions and a cavalry division.
 Detachment maintaining touch with Greeks: one division.
 Total, about 165,000.

GREECE.—The Greek Army was composed of four regular and four reserve divisions (consisting respectively of 14,000 and 9,000 men each) and a cavalry brigade, besides Cretan volunteers. Total, about 100,000 men. In the middle of June the distribution was:—

Two divisions east of Lake Tachinos in the area Orsano—Angista—Lestera.
 Three divisions about Nigrita.
 Two divisions at Yenidje Vardar on the Vardar.
 One division in garrison at Salonica.
 Two divisions in Epirus.

Towards the end of June the division doing garrison duty at Salonica was relieved by marines landed from the fleet.

RUMANIA.—The Rumanian Army consists of five army corps of two divisions each, two cavalry divisions, and eight divisions of militia. The total strength mobilized is said to have been over 400,000 men. Though Rumania possesses a good railway system she needed several days to put her troops on a war footing and to concentrate her Armies on the frontier.

TURKEY.—Finally, there were two masses of Turkish troops numbering 150,000 under Izzet Pacha, and 60,000 under Fakri Pacha at Constantinople and Bular respectively.

To sum up: the Bulgarians in the fighting line mustered 250,000 against some 300,000 Servians and Greeks. They had a further 50,000 men in reserve in Thrace and near Shumla. The sides were, therefore, about equally matched, leaving Rumania out of account.

The possibility of hostile action by Turkey or Rumania was obviously an embarrassment to Bulgarian strategy, and made a rapid success essential, if war should break out. On the other hand, both the Greeks and Servians were weakened more than has generally been recognized by the unsettled state of the newly-conquered territories in the west.

(C) OPERATIONS: FIRST STAGE, THE BULGARIAN OFFENSIVE.

During June repeated complaints were made by the Servians of Bulgarian raids; affairs of outposts took place on either side of the Kustendil—Egri Palanka road, and on the lower Timok. The most serious encounters were on June 18th-19th and June 24th-25th, near Zletovo. On the latter occasion artillery and machine-guns were engaged. Accounts differ as to the causes of these conflicts, but it appears that the Bulgarians were usually the aggressors.

Towards the end of June the strategic situation was fast altering to the disadvantage of Bulgaria. The increase of the Second Servian Army at Pirot to three divisions favoured a concentric advance by the two Servian Armies against Sofia; the Servian defensive works at Pirot, Beli Palanka and Nish and other places were being constantly strengthened. If war was inevitable it was more than ever in Bulgaria's interest, from a strategic point of view, to act at once.

CENTRAL REGION.—On June 28th outpost fighting was renewed on the Zletowska river. On June 30th the Bulgarian main forces took the offensive. Part of the First Army (Kutincheff) captured the Sultan Tepe (7,000 ft.) the highest point of the Osigowska Planina. The bulk of the

Bulgarian forces in the area Kochana—Ishtip advanced across the Bregalnitsa, and had reached the line Sultan Tepe—Redki Buki—Dobrevo—Susevo—Krivolak by the evening of the 30th.

The following translation of divisional orders found on a Bulgarian officer and forwarded by the Servian Legation to Reuter's Agency, refers to the offensive of part of the First Army on the 30th.

MAP SCALE 1: 210,000.

THE COMMANDER OF THE 2ND BRIGADE, 4TH DIVISION:
TO THE COMMANDERS OF THE VARIOUS TROOP SECTIONS AND
ESTABLISHMENTS, VILLAGE BAGNA.

No. 21.

1913, 16/VI., 8 p.m. (Equals 29/ VI. New Style).

(1) Military operations against the Servians and the Greeks begin to-morrow. To the front of the brigade the Servians are holding the line of the Zletovo River. The height Crni Vrh is defended by one Servian infantry regiment, two mountain batteries, and four machine-guns.

(2) The Army advances to morrow at 3 a.m., and attacks the enemy. On our right towards Karadly-Sultan the Macedonia-Adrianople territories will be acting on our left against Stubalj, and further on in a southerly direction the 7th (Rilo) Division is to operate.

(3) The brigade under my command has orders to attack and occupy the position 550 to the west of the village of Dobrevo.

I therefore order:

(a) The right column (Colonel Kisslov) 8 (Primorska) Regiment, three battalions; 3rd Artillery Division, three batteries: altogether three battalions, three batteries—to advance against Svilanovo-Turkish Rudor-Drevena, and after capturing the height north of the village Drevena, to attack from the south-east the position 550.

(b) The left column (Colonel Markoff)—31 (Varna) Regiment, three battalions, eight mountain guns, one battery—to attack from the south the position 550 by way of Raychani—Neokasi—Kalniche. One battalion of the 8th (Primorska) Regiment will remain at my disposal, moving behind the right column.

(4) Sections of both columns will, to-morrow at 3 a.m., noiselessly approach the Zletovo River and annihilate the outposts of the enemy. Thereupon they will vigorously advance upon the objectives assigned to them. The enemy must be taken by surprise.

(5) The commanders of the columns will make exhaustive use of reconnoitring detachments and keep in close touch with each other as well as with adjacent columns.

(6) The commanders will make adequate arrangements for the protection of the exterior flanks.

(7) Ammunition columns and field hospitals at Svilanova.

(8) The supply column at Bagna.

(9) Artillery emergency supply column at Zarevo Selo.

(10) The staff will keep with the one battalion of the 8th Regiment which remains at my disposal.

The Commander of Brigade:

(Signed) COLONEL ENTCHEV.

Chief of Staff:

(Signed) MAJOR KUYUNDJIEV.

The foregoing order has been received by me the 16/VI. at 10.20 p.m.

The Bulgarians seem to have made no further progress in this region on July 1st. Meanwhile, the Servians had brought up reinforcements; they now took the offensive and made vigorous efforts to recapture the important position of Redki Buki. In the centre of the 40-mile line of battle (Dobrevo—tuholo) they pushed the Bulgarians back towards Zletovo. On July 2nd the Servians captured Redki Buki. On July 3rd the Bulgarians endeavoured to regain their positions of July 1st; the effort failed, and they were forced back over the rivers Zletowska and Bregalnitsa to their old positions of June 29th. On July 4th a Servian regiment pushed along the Kustendil road for five miles, but was driven back to Kiselica, north of Egri Palanka, by the Bulgarians, who then occupied the heights north of the latter town.

SOUTHERN REGION.—The Bulgarian Second Army also took the offensive on June 30th. The outposts of the Servian detachment at Geveghli, which formed the link with the Greek Army, extended from the north of Lake Ardzan to Machukovo and Bogdanci. They were surprised by the Bulgarian attack (which is said to have been made with one division) and fell back northwards, on the western bank of the Vardar, to regain touch with their main Army. The Bulgarians thus gained the important stone bridge over the Vardar, and were able to establish themselves on the west bank of that river, astride of the Salonica—Uskub railway, severing communication between the Greeks and Servians.

Further south the main body of Ivanoff's (Second Bulgarian) Army advanced against Salona. The Greek forces east of Lake Tachinos were driven back through Lestera, Pravista, and Chai Aghisi (at the southern end of Lake Tachinos); the Greek war vessels were unable to give effective support on this flank owing to a wooded coastal ridge, the Simolon Oros, which masked the fire of their guns. The Greek troops west of Lake Tachinos were forced back past Nigrita and Lahana and Lake Langaza towards Salona. The result of these successes was to place the Bulgarian Second Army with its left wing on the Beshik Dagh (the range south-west of Lake Tachinos) on the general line: Gulf of Orsano—Suh—Visoka—Guvezne; and its right wing south of Lake Doiran on the line Geveghli—heights south of Kukush (Kilkich).

On the same day the small Bulgarian detachment, about a battalion, which was isolated in Salona, was compelled to surrender to the Greeks after a desperate resistance.

On July 3rd the Greeks were reinforced, and now assumed the offensive, forcing the Bulgarians back from Suh towards Nigrita; from Visoka and Guvezne towards Lahana and Likovan; and from Kukush (Kilkich) and Geveghli towards Doiran. On the evening of July 3rd the Bulgarian line (which was in close contact with the Greeks) extended from Lake Tachinos to Lake Doiran, on the north-western slopes of the Besik Dagh and the south-western slopes of the Krusa Balkans. On July 4th the Greek offensive was continued. Kilkich was taken (apparently for the second time, having been taken and retaken on the 3rd); Nigrita was also captured; Ivanoff's left flank was thus no longer able to rest on Lake Tachinos and had to be withdrawn across the Struma. The loss of Demirhissar, which followed soon after, deprived the Bulgarians of the railway which formed the line of supply for the Second Army.

SITUATION ABOUT JULY 4TH AFTER REPULSE OF BULGARIANS.

The causes of the Bulgarian reverses are not yet definitely known, but they appear in part due to under-estimating the fighting efficiency of their opponents.

A writer in the (Austrian) *Vedette* of July 12th points out that the Servians had the advantages: (a) of thorough acquaintance with the ground in the Ishtip-Bregalnitsa region, over which they had fought last autumn; (b) of the possession of bases on the railway at Uskub and Nish close in rear of their front; and of four good roads leading from the railway towards their front and (c) in the fact that the country adjoining the Uskub—Kumanova—Egri Palanka road possesses numerous transport vehicles and teams of oxen. These circumstances greatly facilitated the problems of reinforcement and supply for the Servian troops. On the other hand, the region in which the Bulgarian main Army was concentrated was deficient in resources and badly supplied with roads.

The only good road, Kustendil—Deve Bair, was not available for the Bulgarians beyond the latter point, as it was then commanded from the Servian artillery positions. The Bulgarian supply service had, therefore, to be carried out by pack transport over bridle paths.

[From the *Tempo*.]

MISCELLANEOUS.

NIGHT FIGHTING.

The writer of the "Open Letter" which appeared in the July number of the *JOURNAL* dwelt strongly on the necessity of everyone, from highest to lowest, knowing beforehand the details of the intended operation of night fighting in which they are about to take part. F.M. Earl Roberts, in a letter to me, writes in the most appreciative terms of the "Open Letter," but he adds some cautionary remarks, which are at once so interesting and instructive that, with his Lordship's permission, I am passing them on for insertion in the August number.—L.A.H.

"No doubt it is most desirable that the idea should be clearly explained to all ranks. But this is not always possible. At the Peiwar Kotal on December 1—2, 1878, I had practically to keep the plan to myself and to the two officers I sent to examine the pass through which our road led. This they could only do very partially, and there was not a single local man I could trust. Nor could I trust some of the native soldiers—several of them were from the neighbouring districts, and I knew that our fighting against the Amir of Kabul was most distasteful to the majority of the Mahomedans in my force. 'Surprise,' as the writer points out, was of 'enormous value,' and I had to run all possible risks to ensure surprise. In that I was nearly foiled by—as I explained in my 'Forty-One Years'—two Mahomedan sepoys firing off their rifles in order to warn the enemy. Fortunately I was close by the company to which the men belonged and was able to put more trustworthy regiments in front of the column.

"The second occasion when I tried a night movement succeeded by my saying nothing to anyone but the commanding officer. It was in December, 1879, when I despatched out of Sherpur a regiment of Native Cavalry to the force coming to my assistance, and which happened to be short of cavalry. Surprise there helped me.

"The anxiety of the night march in December, 1878, was more than I can describe."

ROBERTS, F.M.

MEMORIAL TO THE LATE ADMIRAL OF THE FLEET SIR FREDERICK RICHARDS.

On September 28th of last year there passed away a man endowed with remarkable gifts of character, ability and resolution. Although his name was not prominently before the public, his work as a great naval administrator is none the less deserving of their recognition and enduring gratitude.

The title of "the Silent Worker," which was bestowed upon Admiral of the Fleet Sir Frederick William Richards, G.C.B., D.C.L., by the late Lord Goschen when First Lord of the Admiralty, gives a clear indication of his character, and all who were familiar with his personality and achievements will endorse the eloquent tribute paid to him by the same Statesman, when he affirmed that to Sir Frederick Richards the Nation owed more than to any other man then living.

Apart from his services afloat, to Sir Frederick Richards is in great measure attributable the clear and authoritative statement of the necessity

of maintaining maritime supremacy and the means of securing it. Thus were founded the Naval Defence Act, introduced by Lord George Hamilton in 1889, and the comprehensive scheme of naval defence, including the provision of ships, of men, of naval bases throughout the Empire, instituted by Lord Spencer in 1893, and continued by Lord Goschen.

For a period of over 50 long and strenuous years Sir Frederick Richards served his country, afloat and ashore, in war and in peace, with an absolute disregard of self and a single-minded dedication of his great gifts to the maintenance of the safety, honour and welfare of our Sovereign and his Dominions. As First Sea Lord and chief representative of the Navy on the Board of Admiralty, he kept watch and ward over the security of the Empire for six years (1893-99), and the results of his work, exemplified in the peaceful, because invincible, supremacy of the Royal Navy, were known throughout the world. It must be left to the historian owning a knowledge of the inner workings of events, to do full justice to the share taken by Sir Frederick Richards, with his vigilant foresight and unbending resolution, in maintaining the peace and security of the Empire during a period of frequent anxiety and danger.

In 1899, upon the retirement of Sir Frederick Richards from the Admiralty, the Navy presented to the Nation the portrait of this great naval administrator inscribed with the moving legend: "From the Navy to the Nation." This picture was hung in the Painted Hall of Greenwich Hospital during his life-time, a departure from precedent in itself constituting an unique distinction. The Navy knew his worth, and gave the Nation of its best.

At the death of Sir Frederick, it was felt that his national services should be fittingly commemorated; and his name, his character, and the record of his work preserved as examples and incentives to future generations. A meeting under the Presidency of Admiral of the Fleet Sir Gerard Noel was accordingly held at the Royal United Service Institution on November 13th last. It was attended by a large number of officers and civilians of distinction; and an executive committee was appointed to carry into effect the purpose of the meeting.

His Majesty the King graciously signified his hearty sympathy with the project.

A copy of the report of the meeting, containing the speeches of the Chairman, Mr. Austen Chamberlain, Earl Brassey, Lord Charles Beresford, the late Sir William White, and others, will be forwarded, on application, by Admiral Sir John Durnford, Catisfield, Fareham, Hants.

The invitation to subscribe has hitherto been limited in scope; but the object in view will appeal to all, and, therefore, the Committee now desire to afford to all those who appreciate the work of the late Admiral an opportunity of contributing to the fund.

The Committee hope to be placed in a position to recommend that a public memorial should be erected, and that a trust fund should be created, the interest on which should be applied to some beneficent object connected with the Royal Navy. Donations amounting to a little over £1,000 have been received. It is estimated that, at least, an additional sum of £500 is needed. When the total amount available is known and the matter has been considered by the Committee, their proposals will be submitted more precisely to a general meeting of the subscribers, of which notice will be given in the Press.

Donations, which will be duly acknowledged, may be sent to the following:—The Right Hon. the Viscount Goschen, 21, Lombard Street,

London, E.C. ; Admiral the Right Hon. Lord Charles Beresford, G.C.B., M.P., 1, Great Cumberland Place, Marble Arch, London, W. ; Admiral Sir John Durnford, G.C.B., D.S.O., Catisfield, Fareham, Hants ; Paymaster-in-Chief F. Harrison-Smith, C.B., R.N., Admiralty House, Portsmouth (Hon. Secretary to the Fund).

Cheques, postal orders, etc., should be drawn in favour of "Richards Memorial Fund," and crossed "London County and Westminster Bank, 21, Lombard Street."

(Signed) G. H. NOEL, Chairman.

THE CHURCH LADS' BRIGADE.

We have received the following communication from "A Regimental Colonel, C.L.B.," with reference to the lecture by Captain J. Atkinson, A.S.C. (T.F.), published in the June issue of this JOURNAL :—

"Having read in the June number a lecture by Captain J. Atkinson, A.S.C. (T.F.), on a National Cadet Army, which from the general point of view may be very good, it seems necessary to take very strong exception on behalf of the Church Lads' Brigade to some very disparaging remarks which the Lecturer made on that body.

"Since its inception, 22 years ago, the Church Lads' Brigade has had the strong approval not only of the dignitaries of the Church, but also of the highest military authorities, particularly those who have carried out inspections.

"The Lecturer would relegate the Church Lads' Brigade to the Junior Division, which he proposes for all cadet corps. He is apparently unaware that of the very large number of the Church Lads' Brigade units already recognized as cadet corps, the percentage of lads over 17 is some 40 per cent. of their strength.

"These units are inspected, generally by battalions, by an officer deputed by the General Officer Commanding, and so far as is known at Headquarters of the Brigade, these reports are uniformly satisfactory, and have entitled the units concerned to earn for the funds of the Territorial Associations the £5 grant per company.

"In addition, the large camps, some running up to 2,700 strength, held each year by the Brigade are usually inspected by an officer of the Regular forces, and I have invariably found their reports speak of the good discipline and useful training which has been evidenced at these inspections.

"The Lecturer remarks that in a small town where there is a Church Lads' Brigade company great objection is offered to the formation of any undenominational company. This is quite untrue, as the Brigade takes no boys who do not belong to the Established Church, and, far from opposing undenominational organizations, the orders inculcate the maintenance of good relations with all similar corps, such as the Boys' Brigade, Scouts, etc., and our Headquarters maintain constant co-operation with those of these corps.

"As to Captain Atkinson attributing to the Church Lads' Brigade the old "chestnut," "guns on shoulders," which, if I remember rightly, was applied to the Volunteers some 40 years ago, I can only say that no promotion of officers can take place unless they hold or have held at least a sergeant's certificate in His Majesty's forces, or have passed the Church Lads' Brigade Proficiency Examination. So far as possible to ensure military efficiency, no lieut.-colonel of a battalion can be appointed unless he holds or has held a captain's commission, or has been at least five years a subaltern in His Majesty's forces.

"I may observe that an officer of another cadet corps in the discussion (p. 793 of the JOURNAL) bears good testimony to the Church Lads' Brigade, attributing their 'wonderful success' to their military discipline."

NOTICES OF BOOKS.

Under the Old Flag. Recollections of military operations in the War for the Union, the Spanish War, The Boxer Rebellion, etc. By James Harrison Wilson, Brevet Major-General, U.S.A. 2 vols. 8vo. New York and London, 1912. Appleton. 21s. 8d.

This is a personal record of the experiences and opinions—especially the opinions—of an extraordinarily energetic and shrewd observer during a long and strenuous life. Out of 1,133 pages no less than 945 are devoted to the Civil War. The first thing that will strike the reader is the youth of the author while he held very high commands. He was born in 1837, and was commissioned a second-lieutenant of engineers in 1860. On June 2, 1862, we find him "judge-advocate of a general court-martial to try one of our colonels," the charges against whom were "shameless and promiscuous lying, with 120 specifications." His ambition knew no bounds. In August, 1862, after having been through the Port Royal expedition he writes:—"Although I had been at the head of my branch on the staff, had served in Ordnance, Quartermaster's and Inspector-General's Departments, had helped the artillery, etc. . . . I was far from satisfied." Then in December, 1862, he declines the offer of a lieut.-colonelcy as there was a "colonelcy pending." In January, 1863, he became Assistant Inspector-General of the Army of the Tennessee, and admits his fortune in that his first year's service has won him promotion from lieutenant to lieut.-colonel. When "rounding his 26th year" he was nominated by Grant for brig.-general; in January, 1864, he takes charge of the Cavalry Bureau at Washington, where he succeeded in brow-beating Governor (afterwards President) Andrew Johnson, although he had "never set a squadron in the field." And in April we find him commanding a cavalry division with conspicuous success, and in September, when just 27, he is in command of Sherman's cavalry, and finally of the Cavalry Corps of the Military Division of the Mississippi.

The book does not pretend to be a military history, indeed there is not a single map, or plan, or any historical survey of the leading events of the war: Gettysburg, for instance, does not find a place in the index. It is simply an account of the author's own adventures and his opinions, very freely expressed, of the leading commanders, and their opinions of him. He also makes some general reflections of an interesting nature on such subjects as discipline, organization, strong language, politicians, and the proper use of cavalry.

After a short but interesting introduction on the cause of the war, he gives an animated account of the Port Royal expedition, 1861, with the siege of Fort Pulaski and Secessionville. He then goes to Washington and dismisses Halleck (the Commander-in-Chief) with his "bulging eyes" as "lacking in point and magnetism" and "a negligible quantity." He then joins McClellan's staff and goes through the Antietam campaign. He describes the delay which marked the movement of the troops, and admits his disappointment in McClellan, Burnside and Hooker. He himself took a prominent part in the battle of Antietam, and we are not

surprised to find him, when back at Washington, arguing with, and handsomely defeating, Halleck as to whether or not he (Wilson) should be dismissed for absence without leave.

In November, 1862, he joins Grant's staff in Tennessee, and we get a very pleasing description of Rawlins, Grant's right-hand man, aged 32, the man who, according to Grant himself, "came to be more nearly indispensable to him than any one else." Grant becomes his hero, a hero whom he delights to worship but does not fear to criticise. "My relations with both Rawlins and our common chief grew more and more intimate, and as long as we served together we were as three men with but a single purpose. . . . Grant . . . told Rawlins that he depended more upon my judgment on military matters than upon that of any one else in that Army." These three men indeed formed a remarkable group. Rawlins had "no technical military knowledge whatever, but his intimate relations with Grant from the time he joined the staff put him at the very centre of influence and responsibility, and in the emergencies of Grant's military life gave him not only the last word, but in more than one instance the controlling one." We are forcibly reminded of two other—perhaps the two greatest—Americans of an earlier day. And again, "The great character which passed into history under the name of Grant was lacking and, indeed, never acquired the technical perfection which characterized the great soldiers of history, but as the sequel showed, it finally achieved complete success. If this was at a greater expense of life and treasure than it might have otherwise cost, every American should rejoice that the country's resources in both were equal to the demand made upon them, and that there were two men at least willing to pledge their character and lives to the successful outcome of the great enterprise in which they were engaged." It is pleasant to read of such unity of purpose and noble ideals in the midst of intrigue and self-seeking which were unfortunately only too prevalent on the Northern side.

The Vicksburg campaign is described in some detail. How the leading men differed among themselves, how our author's opinions and suggestions finally prevailed, how the Yazoo Pass and Tallahatchie River were negotiated, how the canal and bayou schemes were abandoned, and finally, how the entire army (including Grant's wife and children) ran the gauntlet of the Vicksburg guns by moonlight, is told with thrilling force. The march from Bruinsburg to Jackson, the disposal of McClellan and as a "disturbing element," the Black Belt and the Big Black, carry us up to the capitulation of Vicksburg. The chapter closes with a short but incisive homily, with Army Organization as the text.

We then come to Sherman's campaign in Alabama, a breezy tour of inspection of the XVIth Army Corps, a few home-truths as to military chiefs who devote their time to "cotton, confederates and corruption" instead of the art of war, a spirited account of Chattanooga and Missionary Ridge, a pathetic description of the "po' white man" of the South, and some interesting comments on the extraordinary dilatoriness and indecision which seems to have been prevalent throughout the Federal Army at this time. In January, 1864, we find General Wilson Chief of the Cavalry Bureau, which he reorganized from top to bottom. He dealt with horse-contractors as drastically as with generals, and with equal success. But it is as a leader of cavalry in the field that he is perhaps seen at his best. In May, 1864, he was put in command of the Third Cavalry Division, and remained a cavalry leader and organizer till the end of the war. His adventures, exploits and achievements while with

the Army of the Potomac are described in great detail, and even the operations known as Grant's Overland Campaign, the Wilderness, the passage of the Chickahominy, Yellow Tavern, the Pamunkey, Hanover Court House, and the passage of the James. Then we have the campaign south of the James, Prince George C.H., the raid towards Lynchburg and Danville and the inexplicable failure of Sheridan "to hold the door open for him" on his return, the breaking of Lee's communications and the Shenandoah Valley. Later he reorganized Sherman's cavalry, defeated Forrest at Franklin, put Hood to flight, and finally carried out the magnificent marauding expedition into Alabama and Georgia, which, with the fall of Selma, the occupation of Montgomery, Macon, Atlanta and Augusta, and the capture of Jefferson Davis, brought the war to an end.

The remainder of the book is devoted to the author's achievements in civil life, to the war with Spain—with a full description of the state of things in Cuba—and to the action of the Allies in China during the Boxer Rebellion. The book teems with trenchant criticisms on men and methods, told, however, in such a patently straightforward manner that they cannot cause offence—even the spicy remarks about the English in Pekin.

The principal lesson that General Wilson seeks to drive home on the subject of cavalry is that it must be employed in large masses. Judged by results his views would appear to have every justification. Interspersed with the more solid matter are numerous anecdotes, and sage (if not sententious) reflections which show the author to have been a man of singular perspicacity and good nature.—C.L.M.O'M.

The Soldier's Foot and the Military Shoe. By Major Edward L. Munson, Medical Corps, United States Army. Price \$1.35. Agents:—U.S. Cavalry Association, Fort Leavenworth, Kansas, U.S.A.

This book is an official text-book of the War Department of the United States. It is based on a four years' careful study of soldiers' feet and military footwear by a board of officers of whom the writer was president; and is written in clear, non-technical language readily understood by the officers and non-commissioned officers of the line, for whose use it is intended. The subjects of feet, footwear, etc., in relation to marching capacity are fully covered in its eight chapters, and are profusely illustrated with 54 cuts, many of which are radiographs. The Board also worked out a new military shoe which is not only scientifically correct, but has proved highly satisfactory under severe marching tests by large bodies of infantry. Much new and original matter appears in the book, the careful reading of which will greatly profit any officer having to do with dismounted troops.

FOREIGN PERIODICALS.

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FRANCE.

REVUE MARITIME. Paris: **May, 1913.**—Observations on the military spirit. Contraband of war and the Declaration of London. The storage and issuing of bedding in the Army and Navy.

LA VIE MARITIME. Paris: **June 10, 1913.**—The cadres of the French Navy. The law of April 17, 1907. The British Naval Estimates. **June 25.**—The grand naval manoeuvres. Questions of pay. The last phase of the naval manoeuvres.

LE MONITEUR DE LA FLOTTE. Paris: **June 7, 1913.**—The naval manoeuvres; the French President at Toulon. The names of the new submarines. **June 14.**—After the manoeuvres. **June 21.**—The new fuses. Promotion of naval officers. **June 28.**—Examinations for promotion. The French President in England. Regulations for "Capitaines de Frégate."

LE YACHT. Paris: **June 7, 1913.**—The French naval manoeuvres. **June 14.**—The French naval manoeuvres.† The naval review at Toulon. **June 21.**—The French naval manoeuvres.† Battle cruisers.

GERMANY.

MARINE RUNDSCHAU. Berlin: **June, 1913.**—The Kaiser and the Navy. Development of foreign policy in the last 25 years. Commercial development of the German Empire under William III.

UNITED STATES.

UNITED STATES NAVAL INSTITUTE PROCEEDINGS. Annapolis: **June, 1913.**—Organization for Navy Department administration. Naval industrialism, naval commercialism and naval discipline. Organization of the ship. The Navy signal system. A more sea-going graduate. A khaki uniform needed for the bluejacket landing force. The Panama Canal. The Colt's automatic revolver, and the instruction of men in its use. The problem of firing at a fleet under way with long-range torpedoes. Rapidity of gun-fire. The necessity of protecting our athletes. Scientific ship designing. Trinitrotoluol, or trotyl. A half century of naval administration in America. The "Santee": an appreciation. The flag of the "Chesapeake": a plea for the Banner with Fifteen Stripes. British Royal Standard. Steam turbines. Notes on the Balkan War.

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DANZER'S ARMEE ZEITUNG. Vienna: **No. 23, June 5, 1913.**—The Redl case.* The depopulation of Austria. **No. 24.**—The development of the armed strength of Germany under Emperor William II. The Redl case.† **No. 25.**—Infantry training on the drill ground and in the field. The Hungarian ordnance factory. **No. 26.**—A note on Norman Angell's "Great Illusion." Discipline on the drill ground and on the battlefield. Free-masonry in the Italian Army.

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*—to be continued.

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the Görz war-game map. *Haute école* and hunting. Recollections of my work with Professor Hubert Kösters (notes on horse-shoes). Horse breeding in Russia and the remount question. New prizes for cavalry offered by the French *Société d'encouragement*.

FRANCE.

REVUE MILITAIRE DES ARMÉES ÉTRANGÈRES. Paris: June, 1913.—The new British field service regulations. The German remount manual. Norwegian manoeuvres in 1912.

JOURNAL DES SCIENCES MILITAIRES. Paris: June 1, 1913.—A study of the consequences of reorganization of the cavalry.* The exercise of command.* Study on bayonet-fighting.* The training of non-commissioned officers re-enlisted as section leaders. Neutral-tinted infantry, transparent infantry (method for rendering troops invisible, so far as possible). June 15.—Infantry field equipment.§ The exercise of command.* A study of the consequences of re-organization of the cavalry.* The Italian Army in the Turco-Italian War.* Study on bayonet-fighting.§

REVUE D'HISTOIRE. Paris: June, 1913.—Notes on military history.* Studies on advanced guards.* Belle-Isle as Minister of War: the recruiting crisis. The campaign of 1794 in the Netherlands.* The War of 1870—71 (operations in the West).* Memorandum on cavalry and light troops in the early days of the Consulate.§

LE SPECTATEUR MILITAIRE. Paris: June 1, 1913.—Army affairs.* Recruitment of natives of Algeria.* General Malet.* Rosbach, Jéna, Waterloo.* June 15.—Army affairs.* In Morocco (operations, December, 1912). Recruitment of natives of Algeria.§ Reflections on the instruction of cavalry units. Rosbach, Jéna, Waterloo.*

REVUE MILITAIRE GÉNÉRALE. Paris: May, 1913.—Beaumont and Sedan.* Study of general strategy and tactics.§ The Battle of the Sha Ho.* Protection in war.* Military notes from Italy (Colonel Cascino's views on musketry). June.—Reflections on the last Grand Manoeuvres. The spirit of sacrifice (reply to an article on the exaggeration of the offensive doctrine in the number for December, 1912). An episode of the Balkan War (fighting round Novak). Kirk-Kilisse, Lulu-Burgas, Chatalja.* The Battle of the Sha Ho.* Protection in war.* An Arab army (military resources of Algeria). Military notes from England (résumé of an article by Captain Twiss in the *Journal of the United Service Institution of India* on the armies of France and Germany).

REVUE DE CAVALERIE. Paris: May, 1913.—General Mishchenko and his cavalry at the Battle of Sandepu, January 25—28, 1905 (o.s.).* Succession War (Colonel Montaigne's book). General Lescot (brief biographical sketch). Cavalry actions.* A note on Colonel de Grandmaison's lectures.§ Random notes.* A study in temperament (character sketch of Lieutenant Monod, killed in action May 25, 1911, at Dar-el-Aroussi). Death or Victory (a soldier's song). Notes on foreign cavalry.

GERMANY.

MILITÄR WOCHENBLATT. Berlin: No. 72, June 3, 1913.—German South-West Africa, the country and the people, from a soldier's point of view (continued in Nos. 73, 74, 75, 76, 81, 82, and concluded in No. 83). Instinct in French strategy and tactics. The reasons for the re-introduction of three years' service in France. Questions affecting the train in the proceedings of the Budget Commission. New stations of the Prussian Army

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according to the Army Bill. **No. 73.**—Calendar for June, 1813. What has become of Moltke's translation of Gibbon's "Decline and Fall"? **No. 74.**—Battle instructions for large units in the Bulgarian Army (continued in Nos. 75, 76, and concluded in No. 78). Thoughts on the training of reserve officers with the troops. **No. 75.**—Aeronautics and aviation in Russia during April. Notes on the French Army (concluded in No. 76). **No. 76.**—The Russian field artillery manual: battery instruction, 1913. Notes on the Italian Army. **No. 77.**—Notice of Count Schlieffen's collected works (continued in Nos. 78, 81, and concluded in No. 82). **Nos. 78-80.**—War as a factor in culture. **No. 81.**—The military situation in the Balkan Peninsula (continued as Notes on the conflict between Bulgaria, Servia and Greece, in No. 82). **No. 82.**—Turkish tactics after the armistice. **No. 83.**—The Breslau Centenary Exhibition. **No. 84.**—An English comparison between the German and French Armies (Captain Twiss's article in the *Journal of the United Service Institution of India*, concluded in No. 85). The action at Sidi Garba on May 16. Notes on the article "Changes in the French Artillery" (in No. 70). Training of medical officers. **No. 85.**—Army appointments approved by the Reichstag in the second reading of the Army Bill. Russian armament projects. The significance of the Balkan conflict (a supplement, with map).

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INTERNATIONALE REVUE ÜBER DIE GESAMTEN ARMEEN UND FLOTTEN. Cologne: **June, 1913.** Belgium: The Belgian Army of the future. Germany: Strength in men of the German Navy, 1913. France: Bayonet fighting in the French Army, General Dubail's circular on training. Great Britain: Naval Estimates, 1913—14. Italy: The political organization of Libya. Naval Estimates, 1913—14. Regulations as to the issue of rations. Austria-Hungary: The position and duties of the Chief of the General Staff. Russia: Cavalry reconnaissance in the Russian Army. War vessels under construction. The roads and railways of Russia for strategical purposes. Switzerland: Swiss manoeuvres, 1913. United States: American submarines. **French Supplement, No. 171.**—Port Arthur. The question of guns in the Balkan War. The conduct of war according to Moltke. **German Supplement, No. 151.**—Strength in machine guns of the armies of the World.

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RIVISTA MILITARE ITALIANA. Rome: **June, 1913.**—The place of war in social life. § Italy in the Mediterranean.* The war in the Balkan Peninsula.* Infantry tactics in Italy.* Professional training of officers.* Military crime in time of war.* Notes on the Army of the United States. The end of an army.* Independent fire and ammunition expenditure. The Tyrol (history and military geography).* Statistical notes on the levy of recruits born in 1890. §

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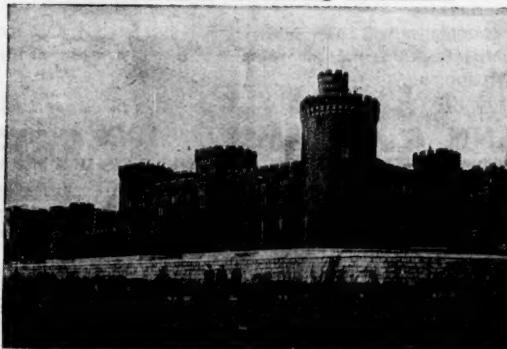
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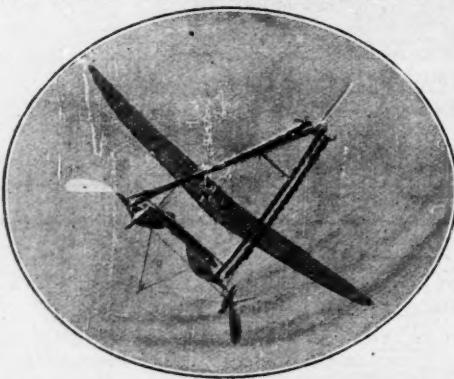
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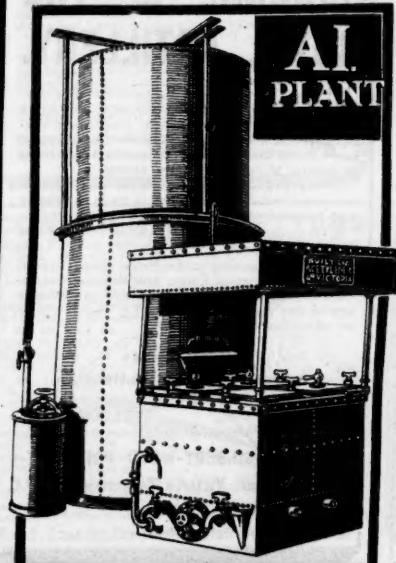
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